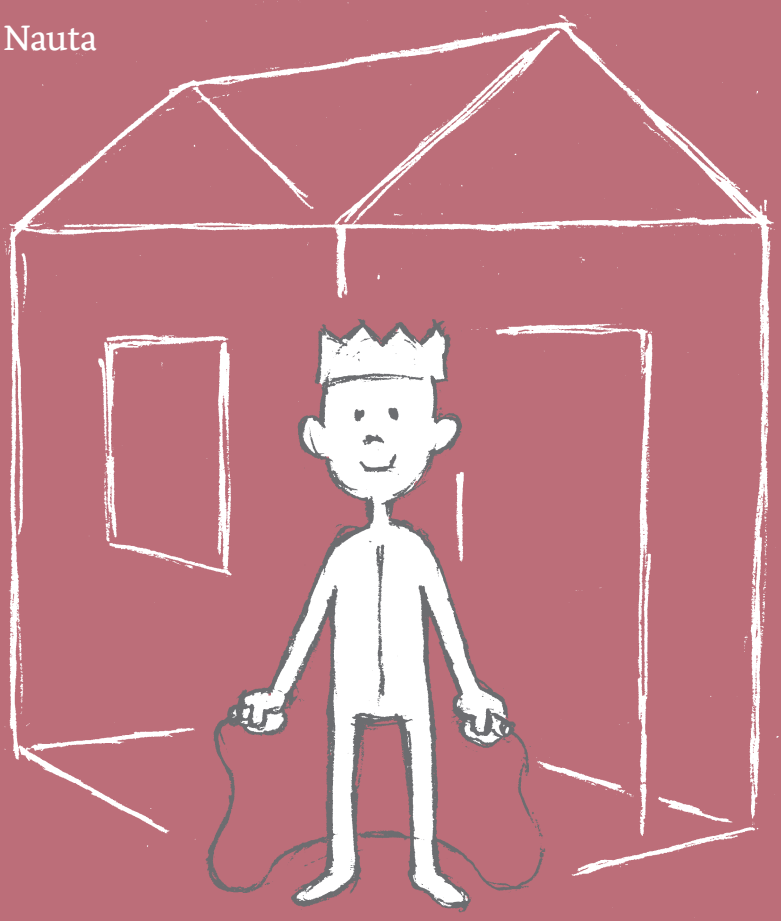
Anxiety disorders in children and adolescents

Nauta, M.H.

Anxiety Disorders in Children and Adolescents: *assessment, cognitive behavioural therapy, and predictors of treatment outcome*

Maaike H. Nauta



Anxiety Disorders in Children and Adolescents:
assessment, cognitive behavioural therapy, and predictors of treatment outcome

ISBN 90-9019185-2
Author: Maaike Heleen Nauta
Cover & design: Rutger Meijer
Print: Febodruk BV, Enschede

Rijksuniversiteit Groningen

Anxiety Disorders in Children and Adolescents:
assessment, cognitive behavioural therapy, and predictors of treatment outcome

Proefschrift

ter verkrijging van het doctoraat in de
Pedagogische, Psychologische en Sociologische Wetenschappen
aan de Rijksuniversiteit Groningen
op gezag van de
Rector Magnificus, dr. F. Zwarts,
in het openbaar te verdedigen op
donderdag 31 maart 2005
om 14.45 uur

door

Maaike Heleen Nauta
geboren op 14 juli 1971
te Delft

Promotores:	prof. dr. P.M.G. Emmelkamp prof. dr. R.B. Minderaa
Co-promotor:	dr. A. Scholing
Beoordelingscommissie:	prof. dr. F. Boer prof. dr. J.A. den Boer prof. dr. P. Prins

Table of contents

Chapter 1:	Introduction: an overview of the field of childhood anxiety disorders	7
Chapter 2:	The Spence Children's Anxiety Scale: psychometric properties in anxiety disordered children	43
Chapter 3:	A parent-report measure of children's anxiety: Psychometric properties and comparison with child-report in a clinic and normal sample	69
Chapter 4:	Clinic-based cognitive-behavioural therapy for anxiety disorders in children: Does additional cognitive parent training enhance treatment effectiveness?	95
Chapter 5:	Cognitive-behavioural therapy for anxiety disordered children in a clinical setting: No additional value of a cognitive parent training	113
Chapter 6:	Predicting treatment outcome for anxious children: child characteristics	129
Chapter 7:	Predicting treatment outcome for anxious children: family characteristics. The myth of strong impact of the family	151
Chapter 8:	Conclusions and implications for further research	167
References		181
Samenvatting		197
Dankwoord		205
Curriculum Vitae		208

Chapter 1

Introduction: an overview of the field of childhood anxiety disorders

Manifestation, prevalence, assessment, impact on current and later functioning, etiological factors, treatment, and predictors of treatment outcome

Normal anxiety

Anxiety is a common feeling throughout childhood and adolescence. Moreover, anxiety is considered as an important means of protection against harm, and is therefore a valuable and functional emotion. In normal development, children go through different transitory phases of elevated anxiety levels. For instance, all babies experience separation anxiety (mostly around 9 months), pre-scholars have periods with higher levels of fear of monsters and ghosts, primary school children go through phases of fear of illness and death, and most adolescents experience some form of worry related to their appearance and evaluation by others.
Fear is perceived as an anxiety disorder when it (a) is excessive in relation to the situation, (b) cannot be reasoned away, (c) is beyond voluntary control, (d) leads to avoidance of the feared object or situation, (e) persists over time, (f) is maladaptive, and (g) is not age specific (Ollendick & Francis, 1988).

Manifestations of childhood anxiety

To date, in the classification system of the Diagnostic and Statistical Manual (DSM-IV; American Psychiatric Association, 1994), there is only one anxiety disorder that is specific for children, namely separation anxiety disorder. Other disorders are formulated in general, and children may suffer from these disorders, just like adults. This thesis focuses on children with separation anxiety disorder, social phobia, generalized anxiety disorder, and panic with or without agoraphobia.

Clinical picture

In general, children with anxiety disorders are characterized by anxiety that is not age-appropriate, that is extreme, that has a long duration, and that interferes with daily functioning. These children tend to avoid confrontation with the feared object or situation, or endure the situations with great anxiety. Anxious children experience a broad range of somatic symptoms, commonly including cardiac and respiratory distress, trembling, flushing or chills, feeling faint, and sweating (Beidel, Christ, & Long, 1991). Other symptoms, such as nausea, headaches, choking, and dizziness, are reported less frequently.

Separation anxiety disorder

Separation anxiety is characterized by developmentally inappropriate and excessive anxiety concerning separation from home or from those to whom the child is attached. The anxiety causes significant distress or impairment in social, academic, or other important areas of

functioning. The duration is at least 4 weeks and the onset must be before the age of 18 (DSM-IV; APA, 1994).
Children with separation anxiety disorder may avoid staying home alone, playing at the house of a friend, staying with a babysitter, or sleeping over at a friend's or relatives' house. Homesickness is extremely common. In addition, separation anxious children may call their parents frequently when away from them and ask repeatedly for reassurance regarding separation or health issues of the parents.

Social phobia (and avoidant disorder of childhood)
Social phobia is defined as a persistent fear of one or more situations involving scrutiny by others because of the possibility of doing something embarrassing or humiliating. Exposure to the social or performance situation almost invariably provokes an immediate anxiety response, and these situations are most commonly avoided, or endured with dread. The anxiety interferes significantly with the child's daily routine, academic or social functioning, or other important areas of functioning. The symptoms must have persisted for at least 6 months (DSM-IV; APA, 1994). In the transition from DSM-III-R to DSM-IV, the childhood anxiety disorder 'avoidant disorder' was excluded from the classification system. The former classification of avoidant disorder seems to be consistent with the current classification of social phobia (Kendall & Warman, 1996). Children with social phobia may avoid asking a friend over, showing initiative during class breaks, ordering at a restaurant or snack bar, asking for something in a shop, joining sport clubs, going to birthday parties, or showing assertiveness in general. In addition to avoidance, children may show the following behaviours: crying, freezing, or irritability. Children with social phobia reported the highest levels of somatic symptoms of children with anxiety disorders, including trembling, heart palpitations, sweating, flushes / chills, and nausea (Beidel et al., 1991).

Generalized anxiety disorder (and overanxious disorder of childhood)
The essential feature of a generalized anxiety disorder (GAD) is excessive anxiety and worry (apprehensive expectation), occurring more days than not, for a period of at least 6 months. The worrying leads to subjective distress due to constant worry, difficulty controlling the worry, or impairment in social, school, or other important areas of functioning (DSM-IV; APA, 1994). In DSM-III-R, overanxious disorder was included as a separate childhood disorder. Current research has shown that most children with overanxious disorder fulfil the criteria of generalized anxiety disorder (Kendall et al., 1996). Children with generalized anxiety disorder may avoid doing schoolwork or performing in sports for fear of making mistakes. In addition, they may ask numerous questions and express repetitive concerns on upcoming events. Child physiological symptoms associated with GAD may include the inability to sit still or relax, difficulty paying attention and concentrating, irritability or getting upset easily, muscle aches, and sleep disturbance (Kendall & Pimentel, 2003).

Panic with or without agoraphobia
A panic attack has been defined as 'a discrete period of intense fear or discomfort' (DSM IV; APA, 1994) and is characterized by 'a concrete period in which there is the sudden onset of

intense apprehension, fearfulness, or terror, often associated with feelings of impending doom. During these attacks, symptoms such as shortness of breath, palpitations, chest pain or discomfort, choking or smothering sensations, and fear of 'going crazy' or losing control are present. Agoraphobia may occur in addition to panic attacks and is defined as anxiety about, or avoidance of, places or situations from which escape might be difficult (or embarrassing) or in which help may not be available in the event of having a panic attack or panic-like symptoms (DSM-IV; APA, 1994). For quite some time, panic disorder was thought not to occur in children. Some researchers claimed that spontaneous panic attacks do not occur in childhood, whereas others argued that they do occur, but that children may not have the cognitive ability to misinterpret the physiological sensations and attribute them to internal causes (for a review, see Ollendick, Mattis, & King, 1994). Current consensus is that panic attacks are quite common among adolescents, and that they may also occur, but less frequently, in children.

Age of onset

In a study by Last, Perrin, Hersen, & Kazdin (1992), the following mean ages of onset were reported: animal phobia: 7 years, separation anxiety: 7.5 years, overanxious disorder: 8.8 years, blood phobia: 9 years, social phobia 11.3 years, dental phobia 12 years, panic disorder 14.1 years. Adolescent boys and girls did not differ with respect to the age of onset of an anxiety disorder (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998).

Age differences

Lower rates of anxiety disorders are reported for children than for adolescents. For example, in a large community sample, a birth cohort was followed and the prevalence of anxiety disorders was 7.5%, 10.7%, 19.7%, and 20.3% at the respective ages of 11, 15, 18, and 21 years (Newman et al., 1996).

Gender differences

Most studies report that, in community samples, more girls than boys suffer from anxiety disorders (e.g. Kashani, Orvaschel, Rosenberg, & Reid, 1989; Weissman, 1988; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), and that the gender ratio is relatively equal in clinical samples (Last et al., 1992). Social phobia, for instance, appears to be more prevalent among females in community samples, while the gender ratio in clinical populations is roughly equal (Last et al., 1992; Turner & Beidel, 1989).

Comorbidity

Children with an anxiety disorder often show other concurrent mental disorders, most frequently other anxiety disorders, and also mood disorders or externalising disorders. For instance, children with social phobia are often comorbid with generalised anxiety disorder and vice versa. The comorbidity rate of anxiety disorders with other anxiety disorders is especially high in clinical samples. Last, Strauss, & Francis (1987) and Anderson (1994) concluded that 50% of anxiety-disordered children had a comorbid anxiety disorder. Strauss, Last, Hersen, & Kazdin (1988) found that 28% of anxiety-disordered children had

also suffered from a major depression. These children were often older and showed more severe anxiety symptomatology. Other researchers reported comorbidity rates of depression of 48.7% in adolescents with an anxiety disorder (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993), 17% for 11-year olds (Anderson, Williams, McGee, & Silva, 1987), 13% for 15-year olds (McGee et al., 1990); and 27.9%in a sample of children aged 9-16 (Costello et al., 2003). Strauss, Lease, Last, & Francis (1988) found that the comorbidity of depression with anxiety disorders was especially high in adolescents (50%) and lower in younger children (20%).
Externalising disorders also have been found to be comorbid with anxiety disorders. Comorbidity rates of externalising disorders are highly variable across age groups and samples: 39% at age 11 (Anderson et al., 1987), 9.9% at age 15 (McGee et al., 1990), and 13.3% for disruptive behaviour disorders in adolescents (Lewinsohn et al., 1993).

Prevalence of childhood anxiety disorders

Community studies

Prevalence rates of fears and worries vary between 4 and 43% (Weissman, 1988). The large range of prevalence rates reported is due to the variety of measures, informants and countries across studies. (Costello et al., 2003) claimed that prevalence rates of mental disorders have been underestimated, because of cross-sectional designs in research. In their longitudinal study, they found a 3-month prevalence of any mental disorder at 13.3%, whereas 36.7% of children had a least one mental disorder in the 4-year period of their study. Prevalence rates of anxiety disorders in community samples, based on clinical interviews (child and parent interviews respectively) vary between 21-29% (Kashani & Orvaschel, 1990), 10.5-16.5% (Verhulst, van der Ende, Ferdinand, & Kasius, 1997), 9.7% (Anderson et al., 1987), and 10.8-3.9% (Fergusson, Horwood, & Lynskey, 1993), and 9.9% (Costello et al., 2003). The general finding and conclusion is that anxiety disorders are the most prevalent childhood disorder in community samples. Simple phobia emerged as the most common anxiety disorder in most community studies (e.g. Anderson et al., 1987).

Clinical samples

With regard to clinical samples, there are only data available from specific anxiety clinics, and not from regular clinical practice. In these anxiety clinics, there seems to be quite some variety in the distribution of anxiety disorders. In the sample of Last and colleagues (1992), separation anxiety was the most common disorder, followed by social phobia, overanxious disorder, and affective disorder. Albano reported a majority of children suffering from social phobia, followed by overanxious disorder, obsessive-compulsive disorder, separation anxiety disorder, simple phobia, and panic disorder. Two large treatment outcome studies on anxiety disorders reported the following data: Kendall, Brady, & Verduin (2001) found, of 173 treated children, that 58.4% had a primary diagnosis of generalised anxiety disorder, followed by separation anxiety disorder (22.2%) and social phobia (18.8%). Barrett, Dadds,and Rapee (1996) reported that their sample (n=79) contained primarily children with

primary separation anxiety disorder and overanxious disorder (both 38%), and secondarily children with social phobia (24%). Note that children with other anxiety diagnoses, such as obsessive-compulsive disorder, panic or simple phobia, were excluded from these two samples.

Impact of childhood anxiety disorders on childhood and later adulthood

Anxiety disorders in children are associated with low levels of adaptive functioning. Compared to nonanxious children, children with anxiety disorders show impairment in peer relations, self-esteem, school performance and social behaviour (Strauss, Frame, & Forehand, 1987). They have more negative social expectations, report lower social self-competence, and their parents and teachers rate them as more socially maladjusted (Chansky & Kendall, 1997). Also, many anxiety disordered adolescents report psychosocial impairment (Essau, Conradt, & Petermann, 2000). Children with anxiety disorders were 2.9 times more likely than children without any disorder to fail to complete secondary school (Vander-Stoep, Weiss, McKnight, Beresford, & Cohen, 2002) and may thus be at risk for less adult economic success, and greater instability at home and at work. In social phobia, children showed a high level of general emotional over-responsiveness and loneliness, had significantly poorer social skills (Beidel, Turner, & Morris, 1999), and reported lower levels of social functioning and lower self esteem (Ginsburg, La Greca, & Silverman, 1998). Generalized anxiety symptoms in children were associated with a higher risk of alcohol consumption in adolescence (Kaplow, Curran, Angold, & Costello, 2001).

Formerly, anxiety symptoms were assumed to be passing phases in childhood and adolescence, but researchers found the level of anxiety symptoms to be relatively stable during childhood in both clinical (Beidel, Fink, & Turner, 1996) and normal children (Verhulst & van der Ende, 1992; Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 2000; Heymens Visser, van der Ende, Koot, & Verhulst, 1999). Research has demonstrated that children with an anxiety disorder were still likely to fulfil the diagnostic criteria up to 8 years after the onset of the disorder (Kovacs & Devlin, 1998). The content of anxiety symptoms, however, may differ over time. Costello et al. (2003) reported that children with an anxiety disorder at one point were likely to continue suffering from the anxiety disorder, or develop depression or substance abuse.

Anxiety disorders in childhood may have impact on later development: 50% of anxiety disordered adults reported anxiety disorders in childhood (Pollack, Otto, Sabatino, & Majcher, 1996). Prospectively, clinically referred children with anxiety disorders seem to be at risk for development of new mental disorders later in life (Last, Perrin, Hersen, & Kazdin, 1996). Epidemiological research has shown that in 80% of the young adult cases, social phobia in adolescence preceded depression, substance misuse, or other anxiety disorders (Wittchen, Stein, & Kessler, 1999). With regard to adjustment, results of one study were more positive: young adults with a history of only anxiety disorder did not show more impairment than normal controls. The only difference found was that they were less likely to be living independent from their family. The group that was at risk for high levels of

impairment later in life included anxious children with comorbid depression (Last, Hansen, & Franco, 1997). This group was less likely to be working or in school, and reported more mental problems.

Assessment of childhood anxiety

Two main types of assessment are available to assess childhood anxiety diagnoses and symptoms, diagnostic interviews and self-report measures.

Diagnostic interviews

The clinical interview is the most common method for assessing childhood anxiety disorders. Several diagnostic interviews are available and most include both parent and child interviews. The first interviews that were developed were the Diagnostic Interview for Children and Adolescents (DICA; Herjanic & Reich, 1982) and the Schedule for Affective Disorders and Schizophrenia in School-age Children (Kiddie-SADS; Puig-Antich & Chambers, 1978). Both interviews follow the DSM-III-R classification. Since major changes were made in the classification of childhood anxiety disorders in the transition from DSM-III-R to DSM-IV, these interviews were not appropriate for the current study. Two diagnostic interviews that follow DSM-IV are the Anxiety Disorder Interview Schedule (ADIS-C/P; Silverman & Nelles, 1988; Dutch version: Siebelink & Treffers, 2001) and the Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984; Dutch version: Ferdinand and van der Ende, 2000).

Anxiety Disorder Interview Schedule (ADIS-C/P; Silverman & Nelles, 1988)

The ADIS-C/P is a commonly used semi-structured interview based on the DSM-IV classification of mental disorders (American Psychiatric Association, 1994). It contains a parent and a child interview schedule that are separately administered. The ADIS C/P was developed to not only evaluate anxiety disorders in children (school phobia, separation anxiety disorder, social phobia, specific phobia, generalized anxiety, panic with or without agoraphobia, obsessive compulsive disorder, post-traumatic stress disorder), but also a variety of other common disorders in children and adolescents, namely attention deficit hyperactivity disorder, oppositional disorder, conduct disorder, depression, and dysthymia. Further, the interview screens for symptoms of a pervasive developmental disorder, schizophrenia, selective mutism, enuresis, and learning problems. For each diagnosis, the clinician poses standardized questions that refer to the DSM-IV criteria of a disorder. Criteria include the symptoms of the disorder, the duration, and the level of interference in daily functioning. Interference rates range from 0 (no interference) to 8 (high interference), with rates of 4 and higher indicating a disorder. The primary diagnosis is the diagnosis that causes most interference with daily functioning. Administration of each interview takes approximately 1.5 hours.

Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984)
The DISC was developed for use in epidemiological studies and is a highly structured interview that demands relatively little clinical knowledge from the interviewer. It contains both a child and parent interview, is suitable for children aged 6-18 years, and the administration of each interview takes approximately 60-75 minutes. The following diagnostic categories are addressed: attention deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, major depressive disorder, dysthymia, simple phobia, separation anxiety, social phobia, generalized anxiety disorder, agoraphobia / panic disorder, and obsessive compulsive disorder. Diagnoses can be obtained through computer calculations. Test-retest reliability was established in community and clinical samples (Jensen et al., 1995).

Choice of diagnostic interview for the current study
The ADIS C/P was developed for clinical practice and is a semi-structured interview. Interviewers must follow the procedure of the interview and pose the questions literally to the child or parent. Semi-structured interviews leave more room for the interviewer than strictly structured interviews such as the DISC. For example, an interviewer can ask for examples or details in order to check the severity or relevance of reported symptoms. This type of interview is closer to clinical practice than more structured interviews. Another advantage of the ADIS C/P relative to the DISC is that interference in daily functioning is central in assigning diagnoses. In the DSM-IV, impairment is one of the main criteria for a diagnosis. For these reasons, the ADIS C/P was chosen for the current studies.

Child self-report questionnaires
There are roughly two kinds of self-report questionnaires to assess childhood anxiety. Older questionnaires were designed to assess childhood anxiety or fear in general. Examples of this type are frequently used and include the Fear Survey Schedule for Children - Revised (FSSC-R; Ollendick, 1983), Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), State-trait Inventory for Children (STAIC; Spielberger, 1973). Newer questionnaires are based on DSM classifications, and subscales include items on symptoms of specific anxiety disorders. These newer questionnaires were developed separately in the late 1990s, and are quite similar to earlier questionnaires. Examples of these questionnaires include the Spence Children's Anxiety Scale (SCAS; Spence, 1998), Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997), the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, & Stallings, 1997), and the Revised Child Anxiety and Depression Scales (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000).

Fear Survey Schedule for Children - Revised (FSSC-R; Ollendick, 1983)
This questionnaire has 80 items on specific fears in children. Items are scored on a 1 (no fear at all) to 3 (very fearful) scale. A total score can be computed, as well as five subscale scores, namely Fear of Failure and Criticism, Fear of the Unknown, Fear of Injury and Small Animals, Fear of Danger and Death, and Medical Fears. The total score ranges from 80-240.

The questionnaire is widely used and normative data are available for children aged 7-18 years. The scale was found to discriminate between children with various phobic disorders (Weems, Silverman, Saavedra, Pina, & Lumpkin, 1999). The Dutch version 'Vragenlijst voor Angst bij Kinderen (VAK)' was developed by Oosterlaan, Prins, Hartman, and Sergeant (1995).

Revised Children's Manifest Anxiety Scale (RCMAS, Reynolds et al., 1978)
The authors labelled this measure as the 'What I think and feel' test. It consists of 37 anxiety items and 11 lie items, and items are answered with yes or no. The scale yields three anxiety factors (Physiological, Worry / Oversensitivity, and Concentration) as well as one total score. Examples of items are 'I have trouble making up my mind', 'I worry a lot of the time', 'I wake up scared some of the time'. Normative information is available for a variety of child groups.

State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1970)
The STAIC consists of two different questionnaires, measuring state and trait anxiety, respectively. State anxiety refers to the present state in the child (e.g. 'I feel calm now'), whereas trait anxiety refers to a general feeling of the child (e.g. 'I am afraid of doing things wrong'). Each scale contains 20 items and items are scored on a 3-point scale. Internal consistency and test-retest reliability have been reported to be satisfactory (Spielberger, 1970). Normative data are available. The Dutch version is called 'Zelfbeoordelingsvragenlijst voor Kinderen' (ZBV-K) and was developed by Bakker, Van Wieringen, Van der Ploeg, and Spielberger (1989).

Spence Children's Anxiety Scale (SCAS; Spence, 1998)
The SCAS was developed to assess symptoms of childhood anxiety disorders, following the DSM-IV classification. This child self-report measure contains 44 items, with each item rated on a 4-point scale (0= never to 3= always). A total score can be derived as well as 6 subscale scores that are closely related to DSM-IV anxiety disorder classifications: Panic / Agoraphobia, Separation anxiety, Social anxiety, Generalized anxiety, Obsessive compulsive disorder, Physical injury fears. Six positively formulated items are included (e.g. 'I feel happy'). Research involving the SCAS has focused predominantly on large community samples, revealing evidence for the hypothesized six-factor structure. The SCAS showed high internal consistency, not only for the scale as a whole, but also for each subscale, with satisfactory test-retest reliability (Spence, 1998; Spence, Barrett, & Turner, 2003; Muris, Merckelbach, Ollendick, King, & Bogie, 2002). The SCAS has been found to show both convergent and divergent validity with both children and adolescents. The Dutch version was developed by Scholing, Nauta, and Spence (1999a).

Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997)
The original SCARED is a 38-item questionnaire with items rated on a 3-point scale (0='almost never' to 2 'often'). Subscales include panic disorder, general anxiety, social phobia, separation anxiety disorder, and school phobia. The SCARED was developed in a clinical sample, and psychometric properties were found to be good (Birmaher et al., 1997;

Birmaher et al., 1999; Monga et al., 2000). Some revisions of the SCARED were made. First, Birmaher added 3 specific social phobia items to the social phobia scale (Birmaher et al., 1999). Later, the SCARED was extended to a 66-item version by Muris, Merckelbach, Schmidt, and Mayer (1999). The major change was the inclusion of symptoms of obsessive-compulsive disorder, post-traumatic stress disorder, and three types of specific phobia, namely animal phobia, situational-environmental phobia, and blood-injection-injury phobia. Muris and colleagues (1999) found support for a one-dimensional construct in a normal sample, combined with some evidence for the hypothesized factors based on analyses on clusters of the SCARED-R items. In addition, they reported good internal consistency within the subscales.

Multidimensional Anxiety Scale for Children (MASC; March et al., 1997)
The MASC is a 39-item self-report questionnaire that assesses four broad anxiety domains, three of which contain two subfactors each, namely physical symptoms (tense-restless and somatic / autonomous), social anxiety (humiliation / rejection and public performance fears), harm avoidance (perfectionism and anxious coping), and separation anxiety. Higher scores on the MASC indicate greater distress. Items are scores on a 0 'never' to 3 'often' scale. The scale was developed in community samples, and also tested in clinical populations (March et al., 1997). The factor structure was found to be invariant across age and gender. Test-retest reliability was satisfactory to excellent.

Revised Child Anxiety and Depression Scales (RCADS; Chorpita et al., 2000)
The RCADS is an adaptation of the Spence Children's Anxiety Scale (SCAS; Spence, 1998). Two main adaptations include the addition of specific items on excessive worry to better represent the DSM-IV category of generalised anxiety disorder, as well as items reflecting symptoms of childhood major depression. The RCADS contains 56 items in total: 38 original SCAS-items, 7 items on Excessive Worry, and 11 items on Major Depression. Like the SCAS, items are scores on a 0 (never) to 3 (always) scale. The new factor structure of the questionnaire proved consistent with DSM-IV anxiety disorders and depression, and the structure was supported by analyses on reliability and structural, convergent, divergent, and discriminant validity (Chorpita et al., 2000). Apart from the increase in items for generalised anxiety and the addition of the major depression subscale, two other changes were made in this new factor structure. First, panic disorder emerged as a separate disorder rather than a panic / agoraphobia factor, with agoraphobia items loading on the separation anxiety subscale. Second, the subscale 'Fear of Physical Injuries' was removed due to weak reliability and validity results.

Choice of child self-reports for the current study
We chose one DSM-IV related questionnaire to be used as a treatment outcome measure. At the moment of the design of this study, only the first versions of the SCAS, SCARED, and MASC were available. At that time, the SCAS was the best option, for three reasons. First, it contained symptoms of all DSM-IV anxiety disorders that we included in the study (unlike the MASC which misses generalised anxiety and panic / agoraphobia); second, obsessive

compulsive symptoms were included (unlike the MASC and the SCARED); and third, items were rated on a four-point scale (unlike the SCARED that has a three-point scale) and we assumed that this broader range could make the questionnaire more sensitive to treatment outcome. The SCAS had not yet been studied in clinical samples and psychometric characteristics are therefore presented in chapter 2 of the current thesis.
In addition to the SCAS, we also chose one traditional measure to assess anxiety or fear in general. The measure was included to investigate treatment outcome and also to establish convergent validity for the SCAS. The FFSC-R was included for two reasons. First, it is a questionnaire that shows the least overlap in symptoms with depression, and we wanted to measure depression as a separate construct. Second, the FSSC-R was widely used in earlier clinical trials in the US and Australia, which enables us to compare the results among the different studies.

Parent reports on child's anxiety
There are two types of parent questionnaire available regarding symptoms of anxiety in children. The first is a broad instrument, the Child Behaviour Check List (CBCL; Achenbach, 1991). The second type includes questionnaires that were derived from child self-report measures following the DSM-IV categories of anxiety, namely the parent versions of the SCAS and the SCARED.

Child Behaviour Check List (CBCL; Achenbach, 1991)
The CBCL is a broad instrument for parents of children aged 6-18 years, that does not specifically measure anxiety in children, but rather measures internalizing and externalising behaviour. The CBCL consists of 118 items, describing a wide domain of behaviour problems. Parents rate their child's behaviour problems on a 0 (does not apply to my child) to 2 (applies clearly or often to my child) scale. The checklist provides T-scores for specific behaviour problem areas as well as for internalizing and externalising behaviour. The scale shows satisfactory psychometric properties and normative data are available (Achenbach, 1991), also for the Dutch version (Gedragsvragenlijst voor Kinderen, by Verhulst, van der Ende, and Koot, 1996).

Spence Children's Anxiety Scale - parent version (SCAS-p; Spence, 1999)
The SCAS-p was developed to measure anxiety symptoms in children. Like the SCAS child self-report it contains 38 items that each refer to one of six clusters of anxiety symptoms, namely Panic / Agoraphobia (9 items), Separation anxiety (6 items), Social anxiety (6 items), Generalized anxiety (6 items), Obsessive-compulsive disorder (6 items), Physical injury fears (5 items). All 38 items can be added up to a total score. Psychometric properties are presented in chapter 2 of the current thesis. The Dutch version was developed by Scholing, Nauta, and Spence (1999b).

Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997)
Recent publications on the SCARED mention a parent version of the SCARED. Parent-child agreement was 0.33 in a clinical sample. To date, no further results on psychometric properties are available.

Choice of parent report on child anxiety for the current study
We chose to use the CBCL as a general measure for child symptomatology. The CBCL is widely used, provides T-scores, and enables us to compare results between studies. Second, a parent measure was included that addressed anxiety symptoms, and that was closely formulated to the chosen child self-report, namely the SCAS. The psychometric properties of the SCASp are evaluated in chapter 3 of the current thesis.

Etiology

Research in the field of etiology of anxiety disorders in children is emerging from a range of different research paradigms. Anxiety disorders are often found to run in families (e.g. Turner, Beidel, & Costello, 1987), but whether this familial factor is biological, environmental, or a combination of the two is still unclear. The primary explanatory models include learning theory, genetic factors, behavioural inhibition, attachment, parental rearing style, and the influence of parental psychopathology. Attachment and behavioural inhibition are theoretical models that derive from developmental psychology and are specific to explain anxiety in children, whereas the others are more general factors derived from adult literature.

Learning theory
Rachman (1977) suggested that three major pathways could lead to the development of childhood fears and phobias: aversive classical conditioning, modelling, and negative information transmission. King, Eleonora, and Ollendick (1998) and Merckelbach, de Jong, Muris, and van den Hout (1996) indeed described evidence for these three pathways to fear. Boer et al. (2002) described that parents of children with anxiety disorders indeed reported more negative life events for these children than for their non-anxious siblings. However, parents also reported more frequently negative life events for the anxious child, when the negative life event was shared by both children (which may reflect heightened vulnerability or reporter bias). Modelling anxious behaviour and transmission of negative information may be present in parents who suffer from anxiety disorders themselves. However, not for all children with childhood phobias one of these paths can be identified (Muris, Merckelbach, de Jong, & Ollendick, 2002), and the origin of these fears can probably be explained by one or several of the other factors described below.

Genetic factors
Genetic influences on the etiology of anxiety disorders are studied in different lines of research, namely twin studies in adults, twin studies in children and adolescents, and adoption studies in children and adolescents. These different methods often lead to different results. Further, the scope of investigation has been either purely on the anxiety disorder, or on anxiety symptoms, which also leads to conflicting results.
The twin study method is based on the difference between monozygotic (MZ) and dizygotic (DZ) twins: MZ twins are genetically identical, whereas DZ twins are genetically non-

identical, like other siblings, sharing approximately 50% of their genes. It is assumed that the twins share the same environment, and therefore one would expect MZ twins more to be similar than DZ twins if the factor studied is under genetic influence.
Adult twins were studied in a large female sample by Kendler and colleagues (e.g. Kendler, Neale, Kessler, Heath, & Eaves, 1992; Kendler et al., 1995). In these studies, the genetic component of anxiety symptoms was quite evident: heritability estimates ranged from 34% to 44%. Interestingly, they reported no role for shared environmental factors: all further variance was explained by unique environmental factors (and measurement error). Unique environmental factors include personal life events, social networks, and school or job related factors. The lack of any influence of the shared environment is common in adult studies on psychopathology (Eley, 2001).
Results for genetic influences were different when investigating heritability in children versus adolescents. Child reported symptoms of fear and phobia were found to have a moderate genetic influence (29%), and also a moderate shared environment influence (23-59%, dependent on the type of fear). The non-shared environment contributed significantly to all fears (Stevenson, Batten, & Cherner, 1992). More evidence for contributions of genetic, shared environment and non-shared environment to fear and phobia symptoms was found in a parent-report study by Lichtenstein and Annas (2000). In a large study on adolescent symptoms of anxiety, there was a huge difference between parent-reported results (high genetic factor of 59% and non significant shared environment influence) and self-report results (high shared environment influence of 55% and no significant genetic component; Thapar & McGuffin, 1995). Another large twin study by Topolski et al. (1997) did find evidence for a genetic component in child-reported anxiety, in combination with a shared-environment component. Genes and shared environment each explained one third of the variance in parent-reported child internalizing symptoms in a twin study by Edelbrock, Rende, Plomin, and Thompson (1995). In the twin study by Eley and Stevenson (1999) the genetic factor was relatively small (10%), combined with a moderate effect for shared environment influences.
In adoption studies, other results were also found. Van Den Oord, Boomsma, & Verhulst (1994) found that parental reports of internalizing child symptoms were mostly determined by unique environmental factors, only moderately by shared environment, and marginally by genetic factors.
In all, there is substantial evidence that shared environment, non-shared environment, and genes influence anxiety and fear. However, the extent to which component contributes to fear or anxiety shows a lot of variability across studies, and seems to depend on type of subjects (adult twins versus child twins versus adoptive children), source (parental report versus child self-report), type of fear or anxiety, and also on gender and age.

Behavioural inhibition
Behavioural inhibition refers to the tendency of some children to react with distress and withdrawal when confronted with strangers or unfamiliar situations. They also stop their activities in these situations. Behavioural inhibition is regarded as a stable and hereditary behavioural response, which is found in approximately 10 to 15% of children, and the

disposition seems to serve as a risk factor for the development of anxiety disorders (see Biederman, Rosenbaum, Bolduc-Murphy, & Faraone, 1993). Several studies have demonstrated the stability of this temperamental construct and its relation to childhood anxiety disorders such as overanxious disorder, phobias, panic, and social phobia (e.g. Hirshfeld, Rosenbaum, Biederman, & Bolduc, 1992; Rosenbaum, Biederman, Hirshfeld, & Bolduc, 1991a; Rosenbaum, Biederman, Hirshfeld, & Bolduc, 1991b, Rosenbaum, Biederman, Bolduc-Murphy, & Faraone, 1993; Biederman et al., 1993; Biederman et al., 2001). Hirshfeld and colleagues (1992) argued that children that show stable patterns of behavioural inhibition throughout their younger years are particularly at risk for the development of anxiety disorders. In addition, young children of parents with anxiety or mood disorders, especially the combination of panic and depression, are at risk for behavioural inhibition (e.g. Rosenbaum et al., 2000). A genetic predisposition is suggested that is found to be significant but not exclusive (e.g. DiLalla, Kagan, & Reznick, 1994). Despite this strong evidence for the linkage between behavioural inhibition at young age and anxiety disorders later in life, some restraint in interpretation is warranted. First, the concept of anxiety and behavioural inhibition show much overlap. The definition of behavioural inhibition as 'a temperamental construct reflecting the tendency to be unusually shy and fearful as a toddler and quiet and withdrawn in unfamiliar situations in the preschool and early school-age years' contains so many symptoms of anxiety, that the results of these longitudinal studies on behavioural inhibition may merely reflect the stability of anxiety symptoms over time. Second, not all children with behavioural inhibition actually develop an anxiety disorder over time and, to date, there is no evidence to say which inhibited children will and which children will not develop an anxiety disorder. Many children with behavioural inhibition develop normally, and many children without behavioural inhibition develop anxiety disorders over time.

Attachment

The concept of attachment comes originally from John Bowlby, who described child attachment behaviour as adaptive behaviour to accomplish proximity to their caregiver. It serves the evolutionary purpose of protecting the infant and reducing the likelihood of harm. Bowlby elaborated his ideas in the trilogy Attachment and Loss (Bowlby, 1969; Bowlby, 1973; Bowlby, 1980). When separated from the caregiver, children will exhibit attachment behaviour and thus elicit protective behaviour from their caregiver. Bowlby postulated an important interaction between the child and the caregiver: a caregiver that is responsive and sensitive to the child's needs, leads to confidence and a feeling of security in the child. These children are called securely attached children. Insecurely attached children do not experience responsiveness and sensitivity from their caregiver, and do not trust that a caretaker will protect them. They may experience chronic vigilance and anxiety, which may set the stage for the development of an anxiety disorder. Moreover, the child's experience in these early relational situations will contribute to the development of 'internal working models of attachment' of the world, significant others, and the self. These internal working models are very influential on how a person construes and experiences his or her relationships later in life. Bowlby's theory was later extended by the work of Mary

Ainsworth. She developed the Strange Situation Test, in which mother-child interactions are carefully studied. During the Strange Situation procedure, the child is exposed to an unfamiliar room, unfamiliar toys, a stranger, and two separations from and reunions with the caregiver. She developed a classification system for types of attachment. Babies who hardly reacted to the reunion with their caregiver were classified as insecure-avoidant (type A). Securely attached children sought contact with their caregiver upon the reunion (type B). Children who showed both willingness to be with the caregiver and rejection towards the caregiver were classified as insecure-ambivalent (type C). Later, a fourth classification was added, namely children that reacted with a mixture of avoidant and ambivalent strategies and did not seem to have a consistent strategy to deal with the reunion. They were called insecure-disorganized (type D). Ainsworth, Blehar, Waters, & Wall (1978) identified parental rearing styles that went together with the child attachment styles. Securely attached children had consistent responsive caregivers, insecure-avoidant attachment was associated with a consistent non-responsive (rejective) rearing style, whereas parents of insecure-ambivalent children showed inconsistent responsive behaviour. So, attachment research has strong roots in developmental psychology. Inspired by Bowlby's supposition that early attachment experiences would lead to internal working models of attachment in adults, the group of Mary Main developed the Adult Attachment Interview (George, Kaplan, & Main, 1996), which supposedly establishes an adult's attachment style. Based on the interview, four attachment styles can be distinguished: dismissing (type A in children), secure / autonomous (type B in children), preoccupied (comparable to type C in children), and unresolved (comparable to type D in children). A body of research has emerged on adult attachment in terms of these four attachment styles, and results suggest that insecure attachment styles are much more common among clinical subjects, but there is hardly any systematic relation between the type of mental disorder and the specific attachment classification (van IJzendoorn & Bakermans-Kranenburg, 1996).

Another line of research on adult attachment has sprouted in personality and social psychology, and deals predominantly with romantic love as an attachment process. Hazan & Shaver (1987) developed a self-report questionnaire to classify adults according to the original three categories of child attachment. In line with this self-report on adult attachment in romantic love relationships, and inspired by Bowlby's concept of attachment in terms of internal working models of self and others, Bartholomew and Horowitz (1991) designed a four category self-report measure. Adults with a positive model of self and others were classified as securely attached, a positive model of self combined with a negative model of others was classified as dismissing, a negative model of self and a positive model of others indicated a preoccupied attachment style, and a fearful attachment style was characterized by negative models of both self and others. This line of research, in which adult attachment was measured in romantic relationships rather than based on childhood memories of caregivers, combined with a different methodology (self-report instead of an interview), also led to a body of research. Adult attachment measured in this way was also found to be related to a number of adverse mental conditions such as anxiety, depression, and low self-esteem (see Pielage, Gerlsma, & Schaap, 2001).

Keeping in mind these different lines of research and different methodologies, we will now

continue with some empirical studies in the specific case of attachment and childhood anxiety disorders. Unfortunately, there is not much empirical research that has examined the relationship between parental attachment and anxiety in children or adolescents. Some empirical studies covered the connection between attachment and anxiety symptoms in children, primary school children who classified themselves as avoidantly or ambivalently attached also reported higher levels of worry (Muris, Meesters, Merckelbach, & Huelsenbeck, 2000b). Also, there is some evidence of infants' anxious attachment to be significantly predictive of anxiety disorders in adolescence (Warren, Huston, Egeland, & Sroufe, 1997). Remarkably, there was no relation between anxiety disorders at age 17 and maternal trait anxiety or child's temperament at birth, leaving anxious attachment as the sole predictor of anxiety symptoms.

One of the few studies connecting parental attachment and both child attachment and child anxiety symptoms was done by Manassis, Bradley, Goldberg, & Hood (1995). They examined attachment in mothers with anxiety disorders and their pre-school children. Results indicated that most mothers and children were insecurely attached and 65% of mothers and children had the same classification. The insecurely attached children had more anxiety disorders and symptoms than the securely attached children. Cowan, Cohn, Cowan, and Pearson (1996) described comparable results: maternal attachment was connected to internalizing symptoms in their offspring.

Parental rearing style

Two independent dimensions of parental rearing style are most often described in research on parental rearing style: warmth versus rejection, and control versus autonomy. Studies of parental rearing style are based upon retrospective reports by adults, current self-reports by children and adolescents, current parent-reports, and observational studies.

An association between retrospectively reported parental bonding experiences and anxiety in adulthood has been reported in a number of studies. (Gerlsma, Emmelkamp, & Arrindell, 1990) concluded in their meta-analysis that anxiety was related to a parental rearing style of less warmth and more control. This effect seemed to be more consistent in clinical than in nonclinical groups. However, these retrospective studies rely directly on the memory of the reporting adult about experiences of the distant past, and may therefore not be an accurate representation of the actual upbringing. Such reports may be biased by current experiences or current mood. Therefore, these results cannot be transposed to the actual rearing situation for the child or adolescent.

Research on the actual childhood did not unanimously indicate an association with anxiety. In his comprehensive review, Rapee (1997) concluded that studies involving children have been less consistent in finding the effects of control and rejection. It is important to consider that the studies mentioned were too few and too methodologically limited to draw firm conclusions. One of the difficulties in assessing actual child rearing is that there is a moderate to low degree of agreement between parents and children in reporting on parental rearing behaviour (Caster, Inderbitzen, & Hope, 1999; Muris, Bögels, Meesters, van der Kamp, & van Oosten, 1996). A few recent studies have underlined this inconsistency in findings and in reporting source.

Muris et al. (1996) found no association between positive or negative parental rearing and fearfulness or internalizing behaviour in clinically referred children. Moreover, they reported no difference between anxiety-disordered children and controls in their perception of parental rearing style. In a control group of primary school children however, a relationship was found between worry and reported parental rejection and anxious rearing (Muris et al., 2000b). In secondary school children, Muris, Meesters, Schouten, and Hoge (2004) did find that parental rearing style related to anxiety levels: in child self-reports, anxiety was related to parental anxious rearing, overprotection, and rejection. The combination of anxious rearing and low perceived control was associated with higher levels of anxiety. Caster et al. (1999) found in a large sample of children and adolescents that parent perceptions of child rearing practices and family environment did not differ between socially anxious and non-anxious adolescents. Child perception, however, did reveal different relationships with social anxiety. Children who were socially anxious perceived their parents as being more socially isolating, overly concerned about others' opinions, ashamed of their shyness and poor performance, and less socially active.
In an observational study analysing parent-child interaction during a discussion task, observers rated parents of children with anxiety disorders as less granting of psychological autonomy than parents of control children (Siqueland, Kendall, & Steinberg, 1996). In this study, self-report data were also collected, and anxiety disordered children rated both their parents as less accepting. However, parent reports revealed no difference between anxious and control groups.
In conclusion: even though retrospective reports of adults suggest that anxiety is associated with overprotection and a lack of warmth, no such consistency is found in current reports of children or parents. In most studies, child self-reports of control or overprotection (but not of warmth or care) were associated with current levels of anxiety. However, no such relation was found in parental reports. One observational study found some evidence that parents of anxiety disordered children were less granting of psychological autonomy.

Parental psychopathology

Several studies report a moderate to strong relationship between anxiety in children and psychopathology in their parents, mainly depression and anxiety disorders (Muris, Steerneman, Merckelbach, & Meesters, 1996). Many studies have showed that offspring of depressed or anxious parents are at risk for developing anxiety or depression (e.g. Warner, Mufson, & Weissman, 1995; Nomura, Wickramaratne, Warner, Mufson, & Weissman, 2002; Mancini, Van Ameringen, Szatmari, Fugere, & Boyle, 1996; Merikangas, Avenevoli, Dierker, & Grillon, 1999). This effect seemed to be even stronger for children with both parents suffering from a disorder. Vice versa, some studies have shown anxiety-disordered children to have parents suffering from depression or anxiety disorders (e.g. Last, Hersen, Kazdin, & Orvaschel, 1991).
Also, there is some evidence that parental psychopathology is linked to child rearing practices. Whaley, Pinto, and Sigman (1999) described in their study on the interaction between anxious mothers and their children, that anxious mothers were less warm and positive and granted less autonomy than control mothers. This behaviour was more

predictive of child anxiety than maternal psychopathology. Merikangas et al. (1999) on the other hand, found in their high-risk study on offspring of anxiety-disordered patients that family environment and parenting did not differ between children at high risk and normal controls.

Combinations of factors

The explanation models mentioned above are surely interrelated: for instance, genetic models imply parental psychopathology, and parental psychopathology is linked with parental attachment style and parental rearing style. The different factors are probably not only related, but also have a cumulative and interactive effect in the development of an anxiety disorder. For instance, researchers have drawn the attention to the possible 'cyclical effect' of parental rearing style and parental psychopathology (Rapee, 1997): parents suffering from psychopathology may be more likely to react with rejection or control to their children. This may increase the likelihood of psychopathology in the child, which may, in turn, elicit parental rejection and control. This suggests an additive effect of these two factors.

This interrelation of factors has inspired some authors to combine the above mentioned factors into a multifactor model of the etiology of anxiety (e.g. Muris & Merckelbach (2001) on specific phobia; Rapee (2001) on generalized anxiety disorder; Morris (2001) on social phobia; Silove & Manicavasagar (2001) on separation anxiety).

Etiology and the current thesis

In the present study, the nature of the etiology of anxiety disorders in children is only addressed in chapter 7, where anxiety disordered children and control children are briefly compared in terms of some of the family variables mentioned above.

The main focus of this thesis is on treatment outcome. The different etiological factors are supposedly influential in the onset and continuation of anxiety disorders. One may argue that they will also be influential during the course of therapy. For instance, parental anxiety or mood disorders may be related to the onset or continuation of the child's anxiety problem, and this factor may also affect the course of treatment. The last paragraph of the current chapter addresses the issue of predicting treatment outcome by family factors.

Interventions

Two main treatment types are available for children with anxiety disorders, namely cognitive behavioural treatment (sometimes combined with parent training) and pharmacological treatments.

Cognitive behavioural therapy (CBT) for childhood anxiety disorders

Different techniques and treatment manuals

The different cognitive behavioural techniques available include techniques based on principles of classical conditioning and techniques based on the principles of operant

conditioning. The goal of techniques based on classical conditioning is breaking the learned dysfunctional relationship between the conditioned and unconditioned stimulus by learning a new meaning to the anxiety-provoking situation. The best-known and most commonly applied strategy is exposure in vivo. During this procedure, children are exposed to their feared stimuli in a stepwise way. Feared situations are commonly rated by the child by means of a fear thermometer (e.g. 0 = not scared at all, 10 = complete panic) and listed in a fear hierarchy. The child practices with the feared situations starting at the least anxiety-provoking situation. Exposure in vivo is thought to be the key ingredient to change in CBT for anxiety-disordered children. Other available CBT techniques based on classical conditioning include vicarious learning and modelling, cognitive techniques (such as challenging thoughts), acquiring new information about feared situations, relaxation exercises, social skills training, coping behaviour, and emotive imagery.

Techniques based on the principles of operant conditioning mainly consist of reinforcing courageous behaviour. The parents or the therapist can perform the positive reinforcement, and the child can learn to reward him or herself.

The first manualised treatment for anxiety-disordered children that covered most of the above-mentioned CBT-techniques was called the Coping Cat program (Kendall, Kane, Howard, & Siqueland, 1990; Kendall, 1994). In this manual, 16 sessions are described in which the child consecutively learns coping skills in 8 sessions, followed by exposure in vivo exercises in another 8 sessions. The program was designed for children aged 9-13 years, and includes an attractive workbook for the child. In this program, however, rewarding courageous behaviour is only conducted by the therapist and the child him or her self. No explicit parental guidelines are given. To fill this lacuna, Barrett et al. (1996) were the first to develop a manualised family anxiety management program that was used to run in parallel with a 12-session Australian adaptation of Kendall's CBT program, the Coping Koala program. The family anxiety management program focused on three areas, namely teaching parents to reinforce courageous behaviour and ignore excessive complaining and anxious behaviour, teaching parents insight into their own anxiety responses and modelling coping behaviour, and teaching parents communication and problem-solving skills.

Since then, other treatment manuals have been developed, mostly based on Kendall's Coping Cat program, using the same techniques. Some programs were shortened (e.g. Barrett et al., 1996) or adapted for groups (e.g. Silverman et al., 1999a; Mendlowitz et al., 1999; Mendlowitz et al., 1999), others added a family component (e.g. Barrett et al., 1996; Mendlowitz et al., 1999; Cobham, Dadds, & Spence, 1998), some restricted the program to social phobia and included social skills training (e.g. Beidel, Turner, & Morris, 2000; Hayward et al., 2000; Spence, Donovan, & Brechman-Toussaint, 2000); some focused primarily on exposure exercises and contingency management (e.g. Silverman et al., 1999b), or on exposure and cognitive self control procedures (Silverman et al., 1999b).

For the current study, the Coping Cat method was translated and adapted. Our primary adaptations included a shortening to 12 sessions (instead of 16), the start of exposure exercises in session 4 (instead of 9), the addition of some cognitive techniques, and the addition of some workbook pages for adolescents.

Treatment outcome studies on CBT

When we started this project, only one randomised clinical control study (Kendall, 1994) and several non-controlled studies had been conducted. Since the start of the current study, many more randomised controlled studies have appeared. For reasons of completeness, all treatment outcome studies on CBT are displayed in tables 1.1 (non-controlled trials) and 1.2 (randomised controlled trials), including studies that were published after we set up the design for our study.

Table 1.1. Non-controlled CBT outcome-studies

Study	Included primary disorders	N	Age	Conditions	Conclusions (effect on anxiety symptoms)
Eisen & Silverman, 1993	Overanxious children	4	6-15	CBT, 18 sessions	CBT positive effect
Howard & Kendall, 1996	Anxiety disorders	6	9-13	Family based intervention program	Program superior to baseline
Kane & Kendall, 1989	OAD	4	9-13	CBT	CBT superior to baseline
Lumpkin, Silverman, Weems, Markham, & Kurtines, 2002	SpPh, SAD, SoPh, GAD, OCD	12	6-16	GCBT	GCBT superior to baseline, gains maintained at 6 and 12 month follow-ups
Masia, Klein, Storch, & Corda, 2001	SoPh	6	14-17	School based GCBT	GCBT positive results: effect sizes of 1.8-2.5 on anxiety symptom reduction
Ollendick, Hagopian, & Huntzinger, 1991	SAD, night fears	2	8-10	CBT	CBT superior to baseline
Ollendick, 1995	PDAG	4	13-17	CBT	CBT superior to baseline

Note: CBT = cognitive behavioural Therapy, GCBT = group cognitive behavioural therapy, SAD= separation anxiety disorder, OAD = overanxious disorder, SpPh = Specific phobia, SoPh = social phobia, GAD = generalised anxiety disorder, OCD = obsessive compulsive disorder, PDAG = panic disorder / agoraphobia,

Chronologically, the first studies that were published were non-controlled trials, mostly case studies. In 1994, Kendall was the first to publish data on a large randomised controlled trial including children with separation anxiety disorder, overanxious disorder, and avoidant disorder. He reported the superiority of 16-week individualized CBT compared to a waitlist control period. Next, Barrett et al. (1996) replicated Kendall's positive findings for the individual CBT program, and developed a family program, for which some additional benefit was reported, especially for younger children and girls. More studies have appeared investigating the possible additional benefit of parent of family involvement. For instance, Cobham et al. (1998) developed a parental anxiety management training. This training was especially effective if one of the parents reported elevated levels of anxiety themselves. Mendlowitz et al. (1999) found a parent training program especially effective in enhancing coping strategies, and no differential effect with regard to anxiety reduction in an individual CBT program. Heyne and colleagues (2002), however, reported no additional benefit of a parent teacher training program, and Öst and colleagues (2001) reported no difference in effectiveness when a parent was present during one-session exposure therapy, treating a specific phobia. Another line of research has shown the benefits of group CBT (e.g. Silverman et al., 1999a; Flannery-Schroeder et al., 2000; Hayward et al., 2000).

Table 1.2.
Controlled CBT outcome studies

Study	Included primary disorders	N	Age	Setting (research / lab or clinical practice)	Conditions	Conclusions (effect on anxiety symptoms)
Barrett et al., 1996	SAD, OAD, SoPh	79	7-14	Behaviour Research Therapy Centre of the University of Queensland	1. CBT+FAM 2. CBT 3. Waitlist	1 > 2 >> 3
Beidel et al., 2000	SoPh	67	8-12	Anxiety Intervention and Treatment Centre of the Medical University of South Carolina	1. Social effectiveness training for children 2. Non-specific intervention	1 >> 2
Cobham et al., 1998	SAD, SoPh, GAD, OAD, SP, AG	67	7-14	Child and Adolescent Anxiety Research Project at the University of Queensland	1. CBT 2. CBT + PAM	1 = 2 1 < 2 if parental anxiety
Flannery-Schroeder & Kendall, 2000	GAD, SAD, SoPh	37	8-14	Child and Adolescent Anxiety Disorders Clinic, Temple University	1. Individual CBT 2. GCBT 3. Waitlist	1 > 2 >> 3
Gallagher, Rabian, & McCloskey, 2004	SoPh	23	8-11	The Children's Hospital at the Cleveland Clinic (recruitment through newspapers and schools)	1. 3 x 3 hour sessions CBT 2. Waitlist	1 > 2
Graziano & Mooney, 1980	Night time fears	33	6-12	State University of New York (recruitment through newspapers)	1. 3-week family self-control instruction 2. Waitlist	1 > 2
Heyne et al., 2002	School refusal	61	7-14	School Refusal Clinic at a Child and Adolescent mental health service	1. Individual CBT 2. Parent teacher training 3. Combination	1 < 2 = 3 at post treatment 1 = 2= 3 at follow-up
Hayward et al., 2000	Social phobia in female adolescents	35	Mean 15.8	Stanford University (Recruitment through local advertisements)	1. CBT 2. Untreated	1>2 post treatment 1=2 at follow-up
Kendall, 1994	SAD, SoPh, GAD	47	9-13	Child and Adolescent Anxiety Disorders Clinic, Temple University	1. CBT 2. Waitlist	1>>2
Kendall, Flannery-Schroeder, Panichelli-Mindel, & Southam-Gerow, 1997	SAD, SoPh, GAD	94	9-13	Child and Adolescent Anxiety Disorders Clinic, Temple University	1. CBT 2. Waitlist	1>>2
King et al., 1998	School refusers	34	5-15	School Refusal Clinic (established for this research project)	1. CBT 2. Waitlist	1>2
Last, Hansen, & Franco, 1998	School phobia	56	6-17	Anxiety Treatment Centre of Nova South-eastern University	1. CBT 2. Attention placebo	1 = 2
Mendlowitz et al., 1999	DSM-IV Anxiety disorders	62	7-12	Tertiary care children's hospital (Toronto)	1. GCBT 2. GCBT + PT 3. PT only 4. Waitlist	1 = 2 = 3 >> 4 GCBT + PT superior effect on coping strategies, but not on anxiety symptoms
Menzies & Clarke, 1993	Specific phobia: water	48	3-8	Research setting	1. Exposure in vivo 2. Exposure in vivo + vicarious exposure 3. Vicarious exposure 4. Waitlist	1 = 2 >> 3 = 4

Study	Included primary disorders	N	Age	Setting (research / lab or clinical practice)	Conditions	Conclusions (effect on anxiety symptoms)
Muris, Merckelbach, Holdrinet & Sijsenaar, 1998	Specific phobia of spiders	26	8-17	Research lab	1. Exposure in vivo 2. EMDR 3. Control group of computerised exposure	$1 >> 2 > 3$
Muris, Meesters, & van Melick, 2002	High anxious children	30	9-12	Group training at primary schools (research oriented)	1. CBT 2. Emotional disclosure 3. Waitlist	$1 > 2 = 3$
Öst, Svensson, Hellstroem, & Lindwall, 2001	Specific phobia	60	7-17	University setting, referrals from child psychiatric services and schools	1. One session exposure, child only 2. One session exposure, parent present 3. Waitlist	$1 = 2 > 3$
Shortt, Barrett, & Fox, 2001	GAD, SoPh, SAD	71	6-10	Behaviour Research Therapy Centre of the University of Queensland	1. Group CBT + FAM 2. Waitlist	$1>2$
Silverman et al., 1999a	SoPh, OAD, GAD	56	6-16	Child Anxiety and Phobia Program (Research centre)	1. GCBT 2. Waitlist	$1 >> 2$
Silverman et al., 1999b	SP, SoPh, AG	81	6-16	Child Anxiety and Phobia Program (Research centre)	1. Exposure in vivo (CM) 2. Exposure in vivo (SC) 3. Educational support	$1 = 2 = 3$
Spence et al., 2000	SoPh	50	7-14	Kids Coping Project: Research Project at the University of Queensland	1. CBT+ PAM 2. CBT 3. Waitlist	$1 = 2 >> 3$
Toren et al., 2000	SAD, GAD	24	6-13	Tel-Aviv Community Mental Health Centre	1. CBT + parents 2. Waitlist	$1>2$

Note: CBT = cognitive behavioural therapy, SAD= separation anxiety disorder, OAD = overanxious disorder, SoPh = social phobia, GAD = generalized anxiety disorder, SP = specific phobia, AG = agoraphobia, FAM = family anxiety management program, PAM = parent anxiety management, CM = exposure based contingency management, SC = exposure-based cognitive self-control, GCBT = group cognitive behavioural therapy, PT = parent training, EMDR = Eye Movement Desensitisation and Reprocessing

So far, CBT has proven to be a valuable treatment to reduce anxiety symptoms in children and adolescents. However, the exact effect of additional parent training differs across studies and needs to be further explored.

A major lacuna in most present studies is that the studies are conducted in specialized anxiety clinics of university settings. So far, meta-analyses have concluded that treatment is far more effective in research settings than in regular clinics for mental health (e.g. Weisz, Weiss, & Donenberg, 1992). The so-called 'lab-based' treatments and treatment samples may differ from those in regular clinics in a number of ways, including the implementation of stringent in- and exclusion criteria (such as comorbidity), the procedure of referral (through advertisements rather than through GPs), the inclusion of children that may normally not have sought help (thus decreasing the mean severity of the sample), the exclusive focus on one problem, the specific training of the therapists, the use of structured protocols, and the standard monitoring of the therapists. The present outcome studies described in chapters 4 and 5 were conducted in general clinical practice, with a vast majority of children being referred to general practice rather than recruited for the purpose of the study. In- and exclusion criteria were as broad as possible, in order to have a sample that is representative to children in general clinical practice.

Pharmacological treatment for childhood anxiety disorders

To date, available pharmacological interventions for childhood anxiety disorders include anxiolytic benzodiazepines (such as alprazolam and clonazepam), tricyclic antidepressants (such as imipramine, clomipramine) and new generation antidepressants (such as fluoxetine, fluvoxamine).

In the current paragraph, only studies are included that treated children with separation anxiety, social phobia (or avoidant disorder), generalized anxiety disorder (or overanxious disorder), and panic with or without agoraphobia, added with studies on school phobia or school refusal (that are not classifications in DSM-IV) since recent research has demonstrated that these children often have an anxiety disorder. Contrary to research on adults, there have not been many randomised controlled clinical trials in medication for children. This lack is probably due to economic, structural, and ethical obstacles (Allen, Leonard, & Swedo, 1995). The economic obstacle is that medication is available on the market after the registration for adults. Therefore, there is little incentive for the pharmaceutical industries to put extra effort in obtaining data on safety and efficacy for children. The structural obstacle Allen and colleagues (1995) describe is the lack of trained researchers in this field. Ethically, research on children always poses extra concerns that have led to numerous restrictions on research possibilities. Zito, Derivan, and Greenhill (2004) report another reason for the shortage on published trials in children: some trials have been conducted but data were not published. Table 1.3 summarizes the findings of all controlled and non-controlled trials.

Anxiolytic benzodiazepines

One non-controlled trial on anxiolytic benzodiazepines reported favourable outcome for anxious children. In the 1990s, three randomised controlled clinical trials have been

conducted investigating anxiolytic benzodiazepines, namely two studies on alprazolam, and one on clonazepam. Results of these three studies indicate that anxiolytic benzodiazepines are not superior to placebo in reducing anxiety symptoms in children and adolescents.

Tricyclic antidepressants

The effects of Tricyclic Antidepressants (TCAs) in children with anxiety disorders have been investigated in five placebo-controlled trials, including one study on clomipramine and four studies on imipramine. Results were conflicting, with two studies reporting positive results of TCAs, and results of three studies indicating that TCAs were not superior to placebo. There seems to be consensus on some safety issues with regard to TCAs in children. Close monitoring of serum levels is required, since the difference between a therapeutic doses and a health impairing or even lethal dose is narrow. Due to the lack of consistent positive findings, and the narrow margin of safety, it is concluded that TCAs are not a drug of choice in treating anxiety disorders in children (Wolraich, 2003).

Selective Serotonine Reuptake Inhibitors

Selective Serotonine Reuptake Inhibitors (SSRI's) inhibit the return of serotonin into the presynaptic neuron. The main medications associated with anxiety disorders in children have been fluoxetine, fluvoxamine, sertraline, and citalopram. At this time, four non-controlled and three placebo-controlled studies have been reported for anxiety-disordered children. All studies report reductions in anxiety symptoms, and superiority of SSRIs to placebo. While the overall conclusion is that SSRIs appear to be effective in the treatment of childhood anxiety disorders five important criticisms must be taken into account. Firstly, very little is known about the long-term side effects of the use of SSRIs in children. Some researchers have expressed their concern on the possible adverse effect of medication in children for the developing brain (e.g. a comment by Isaacs, 2001). Also, there are some concerns with regard to possible side effects. One paper described five cases in which the use of SSRIs may have caused the side-effect of bleeding in some children (Lake, Birmaher, Wassick, Mathos, & Yelovich, 2000), and another paper described five cases of a reversible frontal lobe syndrome with subtle symptoms, such as apathy and lack of insight in patients (Garland & Baerg, 2001).

Secondly, the use of SSRIs for childhood depression is controversial and under review, and this controversy may come to impact their use in treating childhood anxiety as well. The main problem is that a lot of trials have not been published, and there may be a publication bias (Zito, Derivan, & Greenhill, 2004). Even though published RCTs have suggested moderately favorable outcome for SSRIs relative to placebo in treating childhood depression, the findings in unpublished trials (included in a review by the Committee on Safety of Medicines) seem to be much less positive, with the risks of the drugs (such as suicidal thoughts or attempted suicide) exceeding the benefits. Fluoxetine was the only SSRI that was not associated with negative outcomes (Whittington et al., 2004). Until further studies can be done, these negative findings in the field of childhood depression suggest that SSRIs should be used with caution in treating children.

Table 1.3. Non-controlled and Controlled Trials on Pharmacological Treatment for Anxiety in Children and Adolescents

Type of medication and trial	Study	Included primary disorders	N	Age	Setting (research / lab or clinical practice)	Conditions	Psycho-social interventions	Conclusions (effect on anxiety symptoms)
Anxiolytic benzodiazepines								
Non-controlled trials								
	Simeon & Ferguson, 1987	OAD, AD	12	8-16	i.n.a.	Alprazolam (4 wk)	i.n.a.	Reduction of anxiety symptoms
Controlled trials								
	Simeon et al., 1992	OAD, AD	30	8-16	i.n.a.	Alprazolam versus placebo (4 wk)	i.n.a.	Alprazolam = placebo
	Bernstein, Garfinkel, & Borchardt, 1990	School refusal	24	7-18	School Refusal Outpatient Clinic, University of Minnesota	Alprazolam versus imipramine versus placebo (8 wk)	Weekly individual therapy + schoolreentry program	Alprazolam = imipramine = placebo
	Graae, Milner, Rizzotto, & Klein, 1994	mainly SAD, no comorbid OCD or mood disorders	15	7-13	Recruited for university-affiliated clinic	Clonazepam versus placebo (4 wk)	Weekly supportive therapy	Clonazepam = placebo
Tricyclic antidepressants								
Controlled trials								
	Bernstein et al., 1990	School refusal	24	7-18	School Refusal Outpatient Clinic of the University of Minnesota	Alprazolam versus imipramine versus placebo	Weekly individual therapy + schoolreentry program	Alprazolam = imipramine = placebo
	Berney et al., 1981	School phobia	46	9-15	Child and Adolescent Psychology and Psychiatry Unit	Clomipramine versus placebo (12 wk)	Weekly individual therapy + casework with parents	Clomipramine = placebo
	Gittelman-Klein & Klein, 1973	School phobia	35	6-14	Hospital	Imipramine versus placebo (6 wk)	Behavioural interventions	Imipramine > placebo
	Klein, Koplewicz, & Kanner, 1992	SAD	21	6-15	Research clinic at the New York State Psychiatric Institute ; both referrals and recruitment through media	Imipramine versus placebo	Weekly behavioural interventions prior and during the study	Imipramine = placebo
	Bernstein et al., 2000	School refusal	63	12-18	Recruited	Imipramine + CBT versus placebo + CBT	CBT in both treatment conditions	Imipramine + CBT > placebo + CBT

Type of medication and trial	Study	Included primary disorders	N	Age	Setting (research / lab or clinical practice)	Conditions	Psycho-social interventions	Conclusions (effect on anxiety symptoms)
Selective Serotonine Reuptake Inhibitors								
Non-controlled trials								
	Birmaher et al., 1994	OAD, SAD, SoPh (treatment resistant; no comorbid MDD, OCD, panic disorder)	21	11-17	Clinical practice	Open-label fluoxetine, retrospective chart review (10 months)	i.n.a.	17 of 21 (81%) patients improved
	Compton et al., 2001	SoPh	14	10-17	Recruited	Open-label sertraline (8 wk)	4 sessions of CBT prior to the study	9 of 14 (64%) patients were (partial) responders
	Prince, Bostic, Monuteaux, Brown, & Place, 2002	Various anxiety disorders	17	Adolescents	Clinical practice	Open label citalopram, retrospective chart review (mean of 22 wk, SD 12 wk)	i.n.a.	14 of 17 (82%) patients rated as effective (CGI)
	Chavira & Stein, 2002	SoPh	12	8-17	Clinical practice	Open label citalopram (12 wk)	8 sessions psycho education + skills training + behavioural exercises with parents present	10 of 12 (83%) of patients improved
Controlled trials								
	Birmaher et al., 2003	GAD, SAD, SoPh	74	7-17	66% recruited, 34% outpatient clinic	Fluoxetine versus placebo (12 wk)	No psychotherapy or CBT, prescribed supportive case management in both conditions	Placebo (35% improved) < fluoxetine (61% improved)
	Walkup et al., 2002	SAD, GAD, SoPh (no comorbidity allowed)	128	6-17	Recruited	Fluvoxamine versus placebo (8 wk)	3 sessions of psycho-education	Placebo < fluvoxamine
	Rynn, Siqueland, & Rickels, 2001	GAD (comorbidity not allowed)	22	5-17	Research Service, with children being referred from psychiatrists and paediatricians	Sertraline versus placebo (9 wk)	Non-CBT treatment-as-usual was continued, no standard intervention as part of the study	Placebo < sertraline

Note: SAD= separation anxiety disorder, GAD = generalized anxiety disorder, SoPh = social phobia, OAD = overanxious disorder, AD = avoidant disorder, CBT= cognitive behavioural therapy, MDD = major depressive disorder, OCD = obsessive compulsive cisorder, i.n.a. = information not available

The third issue contains the inclusion and exclusion criteria. Some studies had very stringent exclusion criteria, like the Walkup-study (2002), excluding children with any comorbid diagnosis. This may seriously limit the application of the findings in clinical practice, where a majority of children suffers from multiple disorders.
Fourth, there is a variety in the methodology used in the studies. Moreover, not all studies included standardized measurements of pre-treatment and post-treatment diagnosis or symptomatology.
And last, there are little 'pure' pharmacotherapy outcome studies available: in most studies, there was some form of psychotherapy added to the pharmacological intervention, and this effect was not examined separately. Kearney and Silverman (1998) argued that the reported effects of medication largely depend on the amount and type of additional psychotherapy.

To date, no study on childhood anxiety disorders compared the effectiveness of medication and CBT.

Predicting treatment outcome

Commonly, about 70% of children treated for anxiety disorders do not meet criteria for an anxiety disorder after CBT, and the majority of children report a moderate to major decrease in anxiety symptoms. Predicting treatment outcome can help to identify characteristics of children or families that do not succeed in CBT, and who may need an addition to the regular CBT program or another form of intervention. Since controlled trials have only been reported since 1994, studies on the prediction of treatment outcome are scarce. However, some of the outcome studies did report the effect of demographics, such as age and gender, and few other studies actually focused on the issue of predicting treatment outcome. Studies on predicting treatment outcome are included in table 1.4.

Child characteristics
With regard to demographic variables, most studies did not find any relationship between treatment outcome and gender (Beidel et al., 2000; Berman et al., 2000; Kendall & Sugarman, 1997; Last et al., 1998; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002; Southam-Gerow, Kendall, & Weersing, 2001. Two studies did find an interaction effect between gender, outcome, and parental involvement: Parent training programs were especially beneficial for girls (Barrett et al., 1996; Cobham et al., 1998). With regard to age, studies either reported no effect (Beidel et al., 2000; Berman et al., 2000; Piacentini et al., 2002), or more favorable results for younger children (Last et al., 1998; Southam-Gerow et al., 2001), especially in interaction with a parent training program (Barrett et al., 1996; Cobham et al., 1998). The primary diagnosis (either separation anxiety disorder, social phobia, specific phobia, or generalized anxiety disorder) did not affect treatment outcome in three studies (Cobham et al., 1998; Barrett et al., 1996; Berman et al., 2000). Severity of complaints or impairment has not been extensively studied, but was an important predictive variable in one study, with children with a higher severity or more impairment reporting more symptoms at post-test (Berman et al., 2000; Piacentini et al., 2002).

Southam-Gerow and collaegues (2001), however, only found evidence for the adverse effect of symptom severity in parent reports and not in child self-reports. With regard to the role of pre-treatment comorbidity, results are conflicting. Some studies have found no impact of comorbidity (Barrett, Duffy, Dadds, & Rapee, 2001; Beidel et al., 2000; Berman et al., 2000 (for externalising symptoms; Kendall et al., 2001; Southam-Gerow et al., 2001), whereas others have found a negative impact of comorbidity on treatment outcome (Piacentini et al., 2002; Toren et al., 2000; Berman et al., 2000 for depression). The reason for this variability in research findings is the large range of methodologies, combined with different definitions of comorbidity (e.g. any comorbid condition, depressive symptomatology or diagnosis, externalising symptoms, comorbid anxiety diagnoses, etc). For a more detailed description of the studies and their definition, see chapter 6.

Parental characteristics

Parental characteristics have also been examined to predict treatment outcome. Anxiety disorders tend to 'run in families' (see paragraph on etiology, this chapter), and it has been argued that familial factors such as certain parental rearing styles and parental anxiety or depression may have adverse effects on the child's treatment outcome. Indeed, some studies have found evidence for the relation between treatment outcome and parental psychopathology (Berman et al., 2000; Southam-Gerow et al., 2001), especially if parents did not receive any additional parent training program (Cobham et al., 1998). However, Crawford and collaegues (2001) found no such effects, and Toren and collaegues (2000) even found that anxious children of mothers with an anxiety disorder improved more than children of nonanxious mothers. The adverse effect of a parental rearing style characterized by control and a lack of warmth has been reported in adult studies. The only study investigating the impact of parent-child interaction on treatment outcome found that perceived parental frustration with their child's behaviour was related to less favorable outcome for the child. Children that perceived more problems in the family were less likely to improve after treatment (Crawford et al., 2001).

The studies included in this brief review showed large variety in methodology used. Some studies made groups of success versus failure (based on diagnoses) and examined the pre-treatment differences between these groups by way of t-tests or ANOVAs. Other studies investigated the relationship between post treatment scores and pre-treatment data by means of (partial) correlations. These two procedures may lead to different results. Also, some studies failed to control for pre-treatment scores. This procedure may lead to artefacts, especially with variables that are known to be related to pre-treatment child anxiety scores, and may thus reflect the relationship between child anxiety and this variable in general, rather than the specific influence on child improvement after therapy.

In short, most studies do not find any negative effect of demographic variables. The effects of severity of complaints, impairment, pre-treatment comorbidity, and familial factors need to be further examined, since results are conflicting and based on few studies that have varying methodologies. Chapters 6 and 7 describe the prediction of treatment outcome with regard to child factors (chapter 6) and parental factors (chapter 7).

Table 1.4. Predicting CBT outcome for anxious children

Study	Included primary disorders	N	Age	Clinical or lab study	Methodology	Included predictors	Conclusions with regard to predictors
Barrett et al., 1996	SAD, OAD, SoPh	79	7-14	Behaviour Research Therapy Centre of the University of Queensland	Chi square tests: diagnostic status at post treatment and 12 months follow-up	Age Gender	CBT+FAM superior for younger children and girls, both at post treatment and 12 months follow-up
						Initial diagnosis	No effect for initial diagnosis
Barrett et al., 2001 (includes data of Barrett et al., 1996)	SAD, OAD, SoPh	52	14-21	Behaviour Research Therapy Centre of the University of Queensland	- MANOVAs: Diagnostic status at long-term follow-up - self reports (child, parent, clinician)	Comorbidity (3 groups: no comorbid disorders versus anxiety comorbidity only versus other comorbid disorders)	No difference between the three groups in diagnostic status or anxiety symptomatology at long-term follow-up
Beidel et al., 2000	SoPh	30 (for these analyses)	8-12	Anxiety Intervention and Treatment Centre of the Medical University of South Carolina	t-tests: success versus failure at post treatment	Race Gender Age (<10, >10) Comorbid disorder (yes/no) (mainly anxiety disorders, some ADHD, 1 depressed)	No effects
Berman et al., 2000 (includes data of Silverman et al., 1999a; Silverman et al., 1999b)	SP, OAD, SoPh, GAD, AG	106	6-17	Child Anxiety and Phobia Program (Research centre)	- t-tests and chi square tests: success versus failure at post treatment (ADIS) - partial correlations, corrected for pre-treatment scores	Age Gender Number of diagnoses Primary diagnosis Treatment format (group versus individual) Child symptoms at pre-test	No effect No effect No effect No effect No effect
						- Trait anxiety (STAIC) at pre	-more symptoms: less gains; not related to treatment failure
						- Depression (CDI) at pretest	-more symptoms: less treatment gains, more treatment failure
						- Externalising symptoms at pretest	- no effect
						Parent symptoms	- more parental depression, fear, hostility, paranoia, and psychoticism: less treatment gains and more treatment failure
						Marital adjustment	No effect
						Interactions:	Parent symptoms less predictive for older children and in group treatment

Cobham et al., 1998	SAD OAD GAD SoPh SP PAN / AG	67	7-14	Child and Adolescent Anxiety Research Project at the University of Queensland	Chi square tests: diagnostic status at post treatment and 12 months follow-up, relative to treatment condition (CBT only versus CBT + PAM)	Age Gender	Older children in individual CBT condition: more treatment success at post treatment if parents did not have anxiety; no effects at follow-up. Girls in the individual CBT condition: more treatment success at post treatment if parents did not have anxiety; no effects at follow-up. Girls with parents that reported anxiety themselves: more benefits from CBT+PAM; no effects at follow-up.
Crawford & Manassis, 2001	GAD, SAD, SP, SoPh, PAN and other (trichotrillo-mania, selective mutism)	61	8-12	Toronto's children's hospital	- correlations with post treatment outcome measures - variables with significant correlations included in regression analyses	Initial diagnosis Child-rated family dysfunction Parent-rated family dysfunction Child-rated frustration Parent-rated frustration Mother psychological symptoms Father psychological symptoms Mother: stress due to difficult child Father: stress due to difficult child Mother: competence as a parent Father: competence as a parent	No effect More dysfunction -> more anxiety at post No effect No effect More frustration->More anxiety at post More problems-> more anx sympt at post No effect More maternal stress-> more anx sympt at post No effect No effect No effect
Kendall et al., 2001 (includes data of Kendall, 1994 and Kendall et al 1997)	GAD, SAD, SoPh	173	8-13	Child and Adolescent Anxiety Disorders Clinic, Temple University	- MANOVAs: free of initial diagnosis	Comorbidity - 3 groups: no comorbid disorders versus anxiety comorbidity only versus other externalising comorbid disorders - number of diagnoses	No effects of pre-treatment diagnoses Comorbidity at post-treatment -> less likely to show remission of anxiety diagnosis at longer term follow-up
Kendall et al., 1997	SAD, SoPh, GAD	94	9-13	Child and Adolescent Anxiety Disorders Clinic, Temple University	MANOVAs	Age Comorbid status Primary diagnoses	No effect No effect No effect

Study	Included primary disorders	N	Age	Clinical or lab study	Methodology	Included predictors	Conclusions with regard to predictors
Kendall et al., 1997	OAD, SAD, AD	190	8-14	Child and Adolescent Anxiety Disorders Clinic, Temple University	Completers versus terminators	Household	More single households in terminators
						Ethnic	More ethnic minorities in terminators
						Self-report anx symptomatology	Less self reported anxiety symptoms in terminators
						Age	No effect
						Gender	No effect
						SES	No effect
						Maternal anxiety	No effect
						Maternal depression	No effect
						Family stress (mother)	No effect
Last et al., 1998	School phobia	56	6-17	Anxiety Treatment Centre of Nova South-eastern University	ANOVAs: Improved versus non-improved (improved = 95% school attendance)	Age	Younger children more improvement in school attendance
						Gender	No effect
						Parental marital status	No effect
						SES	No effect
						Initial primary diagnosis	No effect
						Duration of school refusal	No effect
						School attendance at session 1	Higher school attendance at s1 more likely to have improved at post treatment
Piacentini et al., 2002	OCD	42	5-17	Clinical research program	Simple correlations and t-tests: percent change at post-treatment in NIMH global score (1 item clinician rating)	Age	No effect
						Length of illness	No effect
						Number of sessions attended	No effect
						Baseline OCD severity	More severe obsessions -> poorer outcome
						OCD impairment	More academic impairment -> poorer outcome
						Comorbidity (CDI, MASC, CBCL)	Higher cbcl-> poorer outcome No effect for MASC or CDI
						Gender	No effect
						Medication status	No effect
						Lifetime tic history	No effect
						Therapist experience (yes/no)	No effect

Pina, Silverman, Weems, Kurtines, & Goldman, 2003; (includes data of Silverman et al., 1999a; Silverman et al., 1999b)	SP, SoPh, AG, OAD, GAD	137	6-16	Child Anxiety and Phobia Program (Research centre)	Chi square and t-tests: completers versus noncompleters	Pre-treatment severity (FSSC-R, RCMAS, BDI, CBCL-internalising and CBCL-externalising) Sociodemographics (age, gender, family composition, ethnicity, family income, primary diagnosis)	No effects
Southam-Gerow et al., 2001 (includes data of Kendall, 1994 and Kendall et al 1997)	OAD, GAD, SAD, SoPh, AD	135	7-15	Child and Adolescent Anxiety Disorders Clinic, Temple University	Discriminant analysis: poor response versus good response (2 groups)	Age Ethnicity Gender Family income Family composition Child-reported anx symp pre Child reported CDI pre Mother reported intern pre Mother reported extern pre Teacher reported pre-treatment internalizing symptoms Mother self-reported symptoms of depression	Older -> less favorable No effect No effect No effect No effect No effect No effect More symptoms: less favorable No effect More symptoms -> less favorable More symptoms -> less favorable
Toren et al., 2000	SAD, GAD	24	6-13	Tel-Aviv Community Mental Health Centre	Descriptive: 20 (diagnosis free) versus 2 (diagnosis at follow-up) children	Pre-treatment child ADHD Anxiety disorder in mother	Failure for children with comorbid adhd at pre More improvement for children of anxious mothers
Treadwell, Flannery-Schroeder, & Kendall, 1995	SAD, SoPh, GAD	81	9-13	Child and Adolescent Anxiety Disorders Clinic, Temple University	MANOVAs	Ethnicity Gender	No effects No effects

CBT = cognitive behavioural therapy, SAD = separation anxiety disorder, OAD = overanxious disorder, SoPh = social phobia, SP = specific phobia, GAD = generalised anxiety disorder, AG = agoraphobia, PAN = panic, AD = avoidant disorder, OCD = obsessive compulsive disorder, FAM = family anxiety management, PAM = parent anxiety management, ADIS = Anxiety Disorder Interview Schedule, STAIC = State Trait Anxiety Inventory for Children, CDI = Child Depression Inventory, MASC = Multidimensional Anxiety Scale for Children, CBCL = Child Behaviour Checklist, FSSC-R = Fear Survey Schedule for Children– Revised, RCMAS = Revised Children's Manifest Anxiety Scale, BDI = Beck's Depression Inventory, SES = social economic status

Aims for the current thesis

During the past decade many advances have been made in the field of childhood anxiety disorders. With regard to the assessment of childhood anxiety disorders, structured clinical interviews have been developed, and a range of self-report questionnaires is available. However, these questionnaires have seldom been studied in clinical populations, and there is a lack of psychometric data on parent instruments. In chapter 2, the SCAS self-report is examined in a large sample of both anxiety disordered and nonclinical children. Chapter 3 describes the development of a parent measure (SCAS-p) and evaluates its psychometric properties.

With regard to the treatment of anxiety disordered children, new outcome studies have appeared since the aims for the current research project were formulated. However, the two main research questions remain relevant: Can the positive treatment results of the trials executed in specialized university anxiety clinics be transported to general settings for mental health? What, if any, is the additional value of a parent-training program? Chapter 4 describes a pilot study of 18 children. They all underwent 12 sessions of CBT, and 9 families also received a parent-training program. They were all referred to the Academic Centre for Child and Adolescent Psychiatry for mental health problems. Chapter 5 describes a larger (n=79), waitlist-controlled study in which children also enrolled through the youth department of the Centre for Mental Health in Groningen and through the department of clinical psychology of the University of Groningen.

The final issue that is investigated in the current thesis is the prediction of treatment outcome. Chapter 6 investigates the role of child characteristics (such as age, gender, comorbidity, and intelligence) on treatment outcome, and chapter 7 examines the role of parental factors (such as parental rearing style, parental psychopathology, and marital adjustment). In both studies, the interaction between treatment outcome, additional parent training, and predictor variables is also examined.

Chapter 2

The Spence Children's Anxiety Scale: Psychometric properties in anxiety-disordered children

Nauta, M.H., Abbott, M., Boomsma, A., Emmelkamp, P.M.G., Rapee, R.M., Scholing, A., Spence, S.H., & Waters, A. (under review)

Abstract

543 children and adolescents with anxiety disorders and 654 community children and adolescents completed the Spence Children's Anxiety Scale (SCAS). Confirmatory factor analysis provided support for six intercorrelated factors, analogous to the original findings of Spence (1998) in community samples, and in line with the classification system of DSM-IV. The factors were separation anxiety, generalized anxiety, social phobia, panic / agoraphobia, obsessive-compulsive disorder, and fear of physical injuries. A higher-order factor explained the variance between the factors and corresponded completely with the Generalised anxiety subscale. The factors were invariant across clinical and community groups, age, gender, and country (Netherlands and Australia). Reliability coefficient omega was satisfactory to excellent for all subscales. Support was found for convergent and divergent validity with regard to both child and parent measures. The SCAS discriminated well between anxious and community children, and between the different anxiety disorders, although ROC analysis showed weak discrimination for social phobia and generalised anxiety disorder.

Introduction

Anxiety disorders have been reported in 10-12% of children and adolescents (Verhulst et al., 1997), with non-clinical levels of fears and worries being even more prevalent, with estimates as high as 43% (Weissman, 1988). Indeed, there is general consensus that anxiety disorders are the most prevalent mental disorders of childhood. Generally, anxiety disorders in children and adolescents are associated with low levels of adaptive functioning (Strauss et al., 1987; Essau et al., 2000; Vander-Stoep et al., 2002). Moreover, anxiety disorders in childhood may have an impact on later development, with up to 50% of anxiety-disordered adults reporting such problems during childhood (Pollack et al., 1996). There are strong reasons, therefore, to identify those children and adolescents who show elevated levels of anxiety, in order to ensure that they receive early intervention. Self-report questionnaires play an important part in this identification process and have some major advantages over clinical interviews. First, they are less time consuming, and allow the screening of large groups of children in a cost-efficient way. Further, children can complete the assessment in relative privacy and may perceive less pressure to present a favorable evaluation of themselves.

Two important issues arise with regard to the definition of anxiety and its disorders that have implications for the design of any self-report anxiety questionnaire (e.g. Endler & Kocovski, 2001).

Anxiety as a unidimensional or a multidimensional concept

First, anxiety can be defined as either unidimensional (trait) or multidimensional in nature. Anxiety as a trait refers to a broad, underlying single factor that may form a vulnerability to each of the anxiety disorders. There are several theoretical frameworks in which this single factor has been elaborated. These concepts include negative affectivity, neuroticism, harm avoidance, or behavioural inhibition (see Zinbarg & Barlow, 1996). There are some empirical indications that provide support for a common underlying factor. First, anxiety disorders tend to co-occur: Anderson (1994) concluded that around 50% of children and adolescents in a clinical sample had a concurrent anxiety disorder, which may imply the existence of an underlying construct. Second, - different anxiety disorders tend to respond positively to the same drug and cognitive-behavioural treatment components (e.g. Kendall, 1994), and treatment outcome was independent of specific primary anxiety disorder (Cobham et al., 1998; Barrett et al., 1996; Berman et al., 2000), suggesting that the disorders may have common underlying features. Third, comorbid anxiety disorders tend to fade with successful treatment of the primary anxiety disorder.

In contrast to the unidimensional concept of anxiety, the multidimensional concept emphasizes that clusters of anxiety symptoms reflect meaningful syndromes. The

Diagnostic and Statistical Manual of Mental Disorders (4th edition, DSM-IV, American Psychiatric Association, 1994) is an extended example of this description of different nosologies. Also in clinical practice, the clinician typically requires information about the clustering of specific patterns of anxiety problems. Such information may provide indications as to the type of situations that the child finds difficult and may guide the content of treatment.

Many authors have found evidence for a hierarchical model. Zinbarg and collaegues (1996) described both a higher order factor of trait anxiety and, in addition, lower order factors providing the basis for differentiation among patient groups. Brown, Chorpita, and Barlow (1998) also found separate factors of anxiety, namely generalised anxiety disorder, panic disorder, obsessive-compulsive disorder, and social phobia. In the so-called tripartite model (Clark & Watson, 1991), a general negative affectivity component is defined as being the higher order factor for both anxiety and depression, with anxiety and depression consisting of distinct symptomatology at a 'lower' level. This model has been replicated in children and adolescents (see Laurent & Ettelson, 2001).

Anxiety as a dimensional or a categorical concept

The second issue in the definition of anxiety disorders is the discussion between a dimensional and a categorical concept. In the field of psychology, anxiety is mostly perceived as a dimensional feature, as existing on a continuum. Children differ in their level of anxiety, and those with high levels of anxiety tend to experience greater problems in adaptive functioning. In the categorical concept, which is based on the medical model, a child has an anxiety disorder when meeting certain criteria for that disorder. If a child meets too few criteria, there is no disorder. Three disadvantages of this model are that (1) it does not allow for evaluation of the severity of the disorder, (2) the artificial severity cut-off is quite arbitrary in dividing the two groups with and without the disorder, and (3) individuals in the same category may not share the same symptoms (e.g. in separation anxiety disorder, 3 of 8 symptoms are required in DSM-IV; APA, 1994). Researchers have claimed the necessity of viewing anxiety as a dimensional (versus a categorical) and a multidimensional (versus a unidimensional) concept in both theory and assessment (Endler et al., 2001).

Self-report questionnaires of anxiety in children

In the history of the development of self-report questionnaires of anxiety in children, the two issues of unidimensional versus multidimensional, and of dimensional versus categorical, have been prominent. Traditionally, child-completed anxiety questionnaires have aimed to measure broad anxiety constructs and symptoms rather than specific symptoms of anxiety that reflect diagnostic subtypes of anxiety. Over the past decade, several measures have been developed to assess clusters of anxiety symptoms in young people. These include the Multidimensional Anxiety Scale for Children (MASC; March et al., 1997), the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997), and the Spence Children's Anxiety Scale (Spence, 1997). The last two measures are related to the DSM-IV structure of anxiety disorders. The current study psychometrically evaluated the SCAS. The SCAS was chosen over the MASC because it was closer defined to

the DSM-IV, which is widely used in clinical practice. The SCAS and the SCARED have a similar background and show many similarities. However, there are some advantages of the SCAS over the SCARED. The original version of the SCARED did not have a scale for obsessive-compulsive disorder or specific fears. Further, children fill out the SCARED on a three-point scale, whereas the SCAS uses a four-point scale, thus allowing for a broader range of symptom severity. The latter is useful when a scale must be used in both clinical and community samples.

The Spence Children's Anxiety Scale (SCAS; Spence, 1997)

The SCAS was initially developed to assess the symptoms of anxiety purported to represent the subtypes of child anxiety, consistent with specific DSM-IV anxiety disorders (Spence, 1997). Importantly, the first findings supported the view that emotional, behavioural, cognitive and physiological symptoms of anxiety do tend to cluster together to form discrete disorders that are clearly identifiable and distinct from each other. The study by Spence (1997) identified factors relating to panic disorder and/or agoraphobia, specific phobia, social phobia, obsessive-compulsive disorder, generalized anxiety disorder and fears of physical injury. However, there was a good degree of inter-correlation between factors and a significant level of variance in scores could be explained by a single, higher level factor of anxiety in general. To a large extent, these findings were consistent with the DSM-IV classification of anxiety disorders in children, that assumes a single, major category of anxiety disorder, within which lie subcategories of specific anxiety disorders. In addition, the significant intercorrelation between factors is consistent with the high degree of comorbidity between diagnostic categories typically reported for child anxiety. It should be noted that there was sufficient unique variance in the first-order factors to justify their separate examination as subtypes of anxiety. However, the over-arching higher-order factor of anxiety in general emphasizes that assessment of anxiety in children needs to ensure assessment of a broad spectrum of presenting symptoms, rather than an exclusive focus on any single anxiety disorder.

Similar results were reported by Muris, Schmidt, and Merckelbach (2000a) with a large community sample of Dutch children and adolescents. Confirmatory factor analysis again supported the 6 proposed factors of the SCAS. However, the authors did not examine whether a higher order factor explained the inter-relationships between factors. The six factor model loading on a single higher order factor, was also supported in a study by Spence et al. (2003) with young adolescents. Several studies have been reported that have examined the psychometric properties of the SCAS. The scale has shown high internal consistency, not only for the total score but also for each subscale, with satisfactory test-retest reliability (Essau, Muris, & Ederer, 2002; Spence, 1998; Spence et al., 2003; Muris et al., 2002). In addition, the SCAS has been found to show both convergent and divergent validity with both children and adolescents. In terms of divergent validity, the SCAS correlated only moderately with the Child Depression Inventory (CDI; Kovacs, 1992). Its convergent validity is reflected by high correlations with general measures of child self-reported anxiety (Essau et al., 2002; Spence, 1998; Spence et al., 2003). Parent-child agreement for the SCAS total scale was reasonable ($r = 0.51$ in a group of children with anxiety disorders and $r = 0.49$ in a

community sample; Nauta et al., 2004, which is high considering the fact that most measures show weak parent child agreement in the assessment of child anxiety (Silverman, 1994).

Aims for the current study

The research involving the SCAS has, to date, focussed primarily upon community samples, and questions remain as to the validity of its factor structure, reliability and convergent/divergent validity with clinical populations. The present study had several aims. First, it used confirmatory factor analysis to determine the degree to which the pattern of anxiety symptoms amongst a clinical sample of children is in keeping with a model based largely on the DSM-IV classification of anxiety disorders. It was predicted that anxiety symptoms in clinically anxious children would cluster in a manner that is consistent with the DSM-IV classification of anxiety disorders and consistent with the findings for children in community populations. It was also examined whether, consistent with findings in community samples, the inter-correlations between factors would be satisfactorily explained by a single higher order factor. In order to test this hypothesis, four models were examined and compared with a null model which posits complete independence of all observed measurements and all relations are constrained to be zero (Byrne, 1989). The models selected for evaluation were based on theoretical grounds. The first comparison model (Model 1) was a single factor model in which all symptoms are viewed as reflecting a single, homogenous dimension of anxiety, with minimal variance left to be explained by separate anxiety disorder factors. From a theoretical perspective, Model 1 examined whether the high level of comorbidity of anxiety disorders in children reflects the lack of distinct anxiety categories, with symptoms simply reflecting a single dimension of anxiety.

The second model (Model 2) involved a six factor model reflecting the hypothesized position in which it is proposed that anxiety symptoms will cluster within the factors proposed by DSM-IV, namely panic disorder (with agoraphobia), social phobia, separation anxiety disorder, generalized anxiety disorder, and obsessive compulsive disorder. The SCAS also includes symptoms relating to a sixth dimension of physical injury. This latter dimension was included in the original SCAS in response to the suggestion that fears in children cluster into distinct social and physical domains suggesting the possibility of a fear of physical injury dimension (Campbell & Rapee, 1994). In Model 2, the factors were considered to be independent, thereby reflecting distinct, unrelated clusters of symptoms. Model 3 was defined according to the same structure as Model 2, but allowed the 6 factors to be inter-correlated. In view of comorbidity between anxiety disorders in children, it was predicted that this model would provide a better fit than Models 1 and 2. However, in keeping with DSM-IV classification system, the model assumed that although anxiety symptoms would cluster onto the 6 hypothesized factors, there would be sufficient unique variance to justify acceptance of separate categories of anxiety disorders.

The final model (Model 4) was a higher-order model, which examined the degree to which the data could be explained by 6 clusters of anxiety symptoms, the covariation of which could be accounted for by a single, higher-order factor of anxiety. Such a model is in keeping with DSM-IV, which outlines an overall category of anxiety disorder within which lie subtypes of anxiety disorders.

A second aim of the study was to examine the construct validity of the scale in terms of the association of SCAS scores and diagnostic classification based on structured clinical interviews. In exploring its construct validity, Spence (1998) examined a clinical sample, comprising 20 children with social phobia and 20 with comorbid social phobia and separation anxiety disorder, compared with 20 non-anxious matched controls. As predicted, clinically anxious children showed significantly higher SCAS scores than the non-anxious controls, with comorbid anxious children showing significantly higher total scores than those with pure social phobia. Importantly, the socially anxious children reported higher scores on the social phobia subscale, but not other subscales (except physical fears), in comparison to non-anxious children. Children with both social phobia and separation anxiety reported higher levels of anxiety on all subscales in comparison to non-anxious children and higher scores than the social phobic group on the separation anxiety subscale. The present study examined whether significant differences in SCAS scores would be evident in comparing clinically anxious children versus a general community sample, and whether significant differences in subscale scores would be evident between clinically anxious children presenting with different clinically diagnoses.

Finally, the third aim of the study was to examine the internal consistency and convergent, divergent, and discriminant validity of the SCAS in a large clinical sample of children with different anxiety disorders. Given that data were obtained from both Dutch and Australian samples, a subsidiary goal was to compare findings across the two populations.

Method

Participants

Participants in this study were children aged between 7 and 16 years and their parents, with anxiety disorders (two samples) and from community samples (three samples), collected by Macquarie University and the University of Queensland in Australia, and the University of Groningen in the Netherlands. The demographic variables of the subgroups are shown in table 2.1. The data from the subgroups were pooled into an anxiety disorder sample and a community sample.

The anxiety-disordered group consisted of 543 children, aged 7-16 years (mean age 10.4; SD=2.5). As to gender, 290 children were male and 253 were female (respectively 53% and 47%). Primary diagnoses, based on the Anxiety Disorder Interview Schedule (ADIS C/P; Silverman & Albano, 1996), included separation anxiety disorder (n=109, 20%), generalized anxiety disorder (n=196, 36%), social phobia (n=144, 27%), specific phobia (n=51, 9%), anxiety disorder not otherwise specified (n=2, 0.4%), panic disorder (n=19, 4%), and obsessive-compulsive disorder (n=22, 4%). The children had zero to six secondary diagnoses (mean 1.6, SD=1.3), including anxiety disorders, mood disorders, attention deficit hyperactivity disorder (ADHD), and oppositional defiant disorder. Most families were intact with both original parents living together (n=458, 84%), other families had one single parent (n=63, 12%), or had one parent living with a new partner (n=20, 4%). Most parents were married (n=466, 86%). The majority of the sample was Australian (n=459; 84%), the other children were Dutch (n=84; 16%).

Table 2.1. Demographic and Diagnostic Variables: descriptives (mean (SD) and %)

		Australian anxious Macquarie (n=459)	Dutch anxious (n=84)	Australian controls Macquarie (n=41)	Australian controls Queensland (n=105)	Dutch controls (n=508)
Age		10.3 (2.4)	11.0 (2.4)	10.6 (2.7)	10.6 (1.0)	11.3 (1.5)
Age range		7-16	7-16	7-16	9-12	8-16
Gender	Males	54%	50%	68%	40%	53%
Marital status	married	86%	87%	83%	65%	
parents	separated / divorced	13%	6.0%	12%	24%	
	never married	1%	2%	5%	8%	
	widowed	0.2%	-	-	2%	
	unknown	0.2%	5%	-	1%	100%
Family	dual original	84%	87%	81%		
Composition	single parent	12%	10%	12%		
	parent and stepparent	4%	1%	7%		
	unknown	-	2%	-	100%	100%
Parental age	mother	41.2 (5.2)	41.3 (5.2)	40.0 (5.7)	-	42.3 (4.2)
	father	43.3 (5.8)	43.9 (5.8)	44.1 (6.0)	-	44.3 (4.0)
Primary	SAD	17%	35%	-		-
diagnosis of	GAD	39%	20%	-		-
child	SoPh	24%	38%	-		-
	SpPh	11%	-	-		-
	ANOS	0.4%	-	-		-
	Panic	3%	7%	-		-
	OCD	5%	-	-		-
	None	-	-	100%		-
	Unknown	-	-	-	100%	100%
Number of	Mean (SD)	1.7 (1.4)	1.1 (0.8)	-	-	-
comorbid diagnoses	Range	0-6	0-3	-	-	-

Note: SAD= separation anxiety disorder, GAD = generalised anxiey disorder; SpPh = Specific phobia, SoPh = social phobia, ANOS = anxiety disorder not otherwise specified, OCD = obsessive compulsive disorder,

The community sample consisted of 654 children, of which 508 (78%) were Dutch and 146 (22%) were Australian. They were aged 7-16 years (mean age 11.2, SD=1.6); 237 children were boys (52%) and 317 were girls (48%). Data relating to family composition and parental marital status were not available for the majority of the community children.

Measures

Clinical interview

The Anxiety Disorder Interview Schedule (ADIS C/P; Silverman et al., 1996)

The ADIS C/P is a semi-structured interview based on DSM-IV classification of psychopathology (American Psychiatric Association, 1994), and includes both a child and a parent interview. It addresses the following anxiety disorders: separation anxiety disorder, social phobia, generalized anxiety disorder, specific phobias, panic, agoraphobia, and obsessive-compulsive disorder. Furthermore, it allows for evaluation of depression, dysthymia, ADHD, oppositional disorder, and conduct disorder. The ADIS was used to establish diagnoses of children from clinical subgroups. A clinician followed the ADIS C/P manual for the assignment of diagnoses (Albano & Silverman, 1994). Additionally, the

clinician gave severity ratings to each diagnosis, with a range from 0 (no interference in daily life) to 8 (extreme interference in daily life). Severity ratings of 4-8 indicated the presence of a disorder. The primary disorder was the one with the highest severity rating. Other disorders, if present, were regarded as secondary diagnoses. Inter-rater agreement was calculated on a sample of 75 children assessed at Macquarie University, some of whom were in the current study. Kappa's were as follows: separation anxiety disorder 0.79; generalized anxiety disorder 0.78; social phobia 0.68; Specific phobia 0.75; obsessive-compulsive disorder 0.93 (Lyneham, Abbott, & Rapee, 2004).

Child reports

Spence Children's Anxiety Scale (SCAS; Spence, 1998)

The SCAS was developed to assess anxiety symptoms in children. It has 44 items on a 0 (never) to 3 (always) scale and consists of six subscales, namely Panic attack and agoraphobia (9 items), Separation anxiety disorder (6 items), Social phobia (6 items), Physical injury fears (5 items), Obsessive compulsive disorder (6 items), and Generalized anxiety disorder (6 items). Six items are positively worded filler items. Details regarding its factor structure and reliability and validity were described above. Copies of the SCAS can be downloaded from http://www2.psy.uq.edu.au/~sues/scas/. The Dutch translation (Scholing et al., 1999a) was conducted by the Dutch authors using a forwards and backwards translation method. Copies can be obtained from the first author.

Fear Survey Schedule (FSSC-R; Ollendick, 1983)

The FSSC-R assesses a broad spectrum of specific fears in children. It consists of 80 items, with each item rated on a 1 (not afraid) to 3 (very afraid) scale. The questionnaire has shown to have good test-retest reliability and internal consistency. The measure was included to examine the convergent validity of the SCAS.

Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds et al., 1978)

The RCMAS consists of 37 dichotomous items (true or false). The total score provides an indication of general proneness to anxiety. Additionally, the scale yields three anxiety-related subscale scores, namely Worry or oversensitivity, Physiological anxiety, and Social concerns / concentration. The fourth scale, the Lie factor, was not analysed in this study. The psychometric properties of the scale have been widely reported and recognized to be strong. The measure was included to examine the convergent validity of the SCAS.

Children's Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002)

The CATS was developed to assess a range of negative automatic thoughts in children. The self-report measure has 40 items and children are asked to rate the frequency in which they have experienced the thought on a 0 (not at all) to 4 (all the time) scale. A high total score reflects frequent negative automatic thoughts. The scale yields four subscales, namely physical threat, social threat, personal loss and failure, and hostile intent. Physical and social threats are associated with anxiety, whereas personal loss and failure are associated with depression, and hostile intent with behaviour disorder. The CATS showed high internal consistency as well as acceptable test-retest reliability. In addition, it effectively discriminated between control children and adolescents, and clinically anxious, depressed, and behaviour disorder children. Given these properties the measure was included in order

to examine the convergent and divergent validity of the SCAS. It was predicted that the SCAS would correlate significantly higher with the CATS social and physical threat subscales than with the hostile intent and personal loss and failure subscales.

Children's Depression Inventory (CDI; Kovacs, 1992)

The CDI is a 27-item self-report questionnaire, used to measure depressive symptomatology in children. The child picks out one sentence of a group of three sentences, describing best how he or she has felt during the past two weeks. The measure is widely used in research and clinical practice and has well-established psychometric properties. This measure was included to investigate the divergent validity of the SCAS. It was predicted that the SCAS would show significantly higher correlations with the measures that were proposed to assess constructs related to anxiety (FSSC-R, RCMAS, and CATS) than with the measure of depressive symptoms (CDI).

Parent reports

Spence Children's Anxiety Scale for Parents (SCAS-P; Spence, 1999)

The items of the SCAS-P were formulated closely to the corresponding item of the child version of the SCAS. Items referring to an internal state (e.g., item 4, 'I feel afraid') were rephrased into observable behaviour for parents (e.g., 'My child complains of feeling afraid'). The positive filler items were not included in the SCAS-P, leaving 38 items in the scale on the same 0 (never) to 3 (always) scale. The SCAS-P has been shown to have strong psychometric properties. Results of confirmatory factor analysis provided support for six intercorrelated factors that corresponded with the child self-report as well as with the classification of anxiety disorders by DSM-IV (namely separation anxiety, generalized anxiety, social phobia, panic / agoraphobia, obsessive compulsive disorder, and fear of physical injuries). A post-hoc model in which generalized anxiety functioned as the higher order factor for the other five factors also described the data well. The reliability of the total score subscales was found to be high. There is evidence to support convergent and divergent validity, with the total score correlating highly with the parent report for internalizing symptoms, but lower with externalising symptoms (Nauta et al., 2004).

Child Behaviour CheckList (CBCL; Achenbach, 1991).

The CBCL is a commonly used parent measure to assess child behaviour problems. It includes 118 items addressing behavioural and emotional problems. Parents are asked to evaluate whether the behaviour is not true (0) for their child, somewhat or sometimes true (1), or very true or often true (2), now or during the past six months. For reasons of comparability between the two countries in this study, t-scores were used in the analyses. The psychometric properties of this scale have been well established and the measure is widely used internationally. The CBCL was included to assess the construct validity of the SCAS-P, with significant correlations being predicted between the SCAS-P and the CBCL internalising scale than between SCAS-P and the CBCL externalising scale.

All anxiety-disordered children were diagnosed using the ADIS C/P and completed the SCAS and the CDI, with their parents completing the SCAS-P and the Child Behaviour CheckList. In addition, Australian children completed the RCMAS and the CATS, whereas Dutch children completed the FSSC-R. With regard to the community sample, only SCAS child self-report data were used in the present study.

Procedure

Sample 1: Anxiety-disordered children (n=543)

The Australian sample came from the Child and Adolescent Anxiety Clinic at Macquarie University. The Dutch sample consisted of children from an outpatient clinic (Academic Centre for Child and Adolescent Psychiatry Groningen), a regional outpatient setting for mental health (Centre for Youth Mental Health Care Groningen) and the outpatient facility of the Department of Clinical Psychology of the University of Groningen. Children were referred from a range of sources including parents, general practitioners, school counsellors, and media articles. All children were assessed by trained clinicians or by graduate students in psychology, under the supervision of experienced clinical psychologists. Assessment was based on both the Child and Parent versions of the ADIS C/P. Questionnaires were completed either at home (Australia) or in the clinic with a researcher present (Netherlands). Where questionnaires were completed at home, parents were asked to help their child with reading assistance if required, but were instructed not to interpret or assist their child's responses. Written, informed consent was obtained from all parents and children aged 12 years and above.

Sample 2: Community children (n=654)

For community children, the procedure varied across the different locations. At the University of Queensland (n=105) and in the Netherlands (n=508) the children were all recruited through schools. One Australian school and four Dutch schools agreed to have the children fill out the forms in the classroom in the presence of a researcher. In addition, in six Dutch schools, children took an information leaflet home, asking their families to participate in the study. Families that returned the leaflet received questionnaires at home and sent back the completed forms. Thus, the Queensland and Dutch children may have had some mental disorders at the same rates as would be expected in any community sample. Macquarie University recruited 41 children through flyers in local businesses and media advertisements asking for confident and worry-free children between the ages of 7 and 16 years to act as research volunteers. Families were given 'thank you' packs that included vouchers for local businesses in appreciation for their time and effort in acting as research volunteers. Participants completed the questionnaire battery at home and returned their questionnaires at the interview session. All these participants were interviewed using parent and child versions of the ADIS C/P, and were included if they did not meet criteria for any major mental disorder.

For a more detailed description of the sample and procedure the reader is referred to Nauta et al., 2004).

Results

Preliminary analyses

First, Dutch and Australian data were analysed on differences between the countries on SCAS subscales, age, and gender. Since levels of significance are highly dependent on

sample size, we also evaluated the effect size of the significant results to investigate the meaningfulness of the significant difference. Test statistic η_p^2 (partial eta squared) describes the proportion of total variability attributable to a factor. In the anxiety-disordered group, there was no multivariate effect of country with regard to SCAS subscales ($F(1,541) = 1.68$, $p<.13$). Also, there was no difference in sex distribution between the anxious children in the two countries ($\chi^2_{(1, N=543)} = .46$, $p<.50$). Dutch anxious children were significantly older than Australian anxious children (mean age 11.0 and 10.3 respectively; $F(1,541) = 5.0$, $p<.03$, effect size $\eta_p^2=0.018$). The distribution of primary anxiety disorders was significantly different in the two countries ($\chi^2_{(6, N=543)} = 40.0$, $p<.001$). One of the main differences was that the Dutch sample did not contain children with specific phobias or OCD. In the community sample, there was no multivariate effect of country between the SCAS subscales ($F(1,652)=1.61$, $p<.14$), or on gender ($\chi^2_{(1, N=565)} = .04$, $p<.85$). Again, Dutch children were significantly older than Australian children (mean age 11.3 and 10.6 respectively; $F(1,652) = 23.3$, $p<.001$, $\eta_p^2=0.015$). Since the effect sizes were small, with only 1.8% and 1.5% of the variance being explained by the factor country in the respective samples, we thought it was justified to pool the data for both countries in all analyses. Factorial invariance across the two countries is examined later in this paper.

Factor structure: Model testing through Confirmatory Factor Analysis in the sample of anxiety disordered children

As noted above, the factor analysis compared four models including: (1) one factor, (2) six uncorrelated factors, (3) six correlated factors, and (4) six correlated factors loading on one higher order factor. These models were evaluated using the statistical package of LISREL (Jöreskop & Sörbom, 1996). This model testing provides a technique to determine which model is the most accurate in describing the covariances between the observed variables. Because of some skewness and kurtosis in the data, we choose the parameter estimation that is probably most robust to non-normality, conditional upon the sample sizes in this study: the robust maximum likelihood parameter using an asymptotic covariance matrix (Boomsma & Hoogland, 2001).

LISREL provides a range of goodness-of-fit indices. The value of χ^2 is a likelihood ratio test statistic. A statistically significant χ^2-value reveals a significant difference between the hypothesized model-implied covariances and the observed covariances, thus rejecting the null hypothesis that the model fits the data. The ordinary, minimum fit function chi-square statistic and the normal-theory weighted chi-square statistic, are known to be non-robust against non-normality (non-normal kurtosis in particular). Therefore, the more robust Satorra-Bentler chi-square statistic was reported in our analyses. The χ^2 value is known to be dependent on sample size (e.g. Stevens, 1996) with models often being rejected in large samples. Other goodness of fit indices have been developed that are not or less dependent on sample size, and the Comparative Fit Index (CFI) was chosen for this study. Values of 0.90 or higher indicate that the hypothesized model fits the data adequately. The Root Mean Squared Error of Approximation (RMSEA) takes into account the degrees of freedom of the model relative to the discrepancy between the model and the observed data; it is a function of the so-called error of approximation. A value of 0.05 or lower indicates a good fit of the

data, values around 0.08 indicate a reasonable error of approximation, and values greater than 0.10 indicate that the model does not fit to the data (Browne & Cudeck, 1992). Finally, the Standardized Root Mean Square Residuals (SRMR) is supposed to be lower than 0.10 and is preferably around 0.05 or lower if the model fits the data well (Hu & Bentler, 1999).

Model 1: one single factor

All items loaded significantly on the single factor, with completely standardized loadings ranging from .16 to .67 (median at 0.49). Six items had a loading less than 0.40, namely item 15 'I feel scared if I have to sleep on my own', item 18 'I am scared of dogs', item 23 'I am scared of going to the doctors or dentists', item 25 'I am scared of heights', item 33 'I am scared of insects or spiders', and item 35 'I feel afraid when I have to talk in front of my class'. Table 2.2 summarizes the findings with regard to the goodness of fit indices. Relatively low factor loadings, the large χ^2 value, the low CFI, the large RMSEA, and the large SRMR suggest that a single factor did not provide a good fit for the data.

Table 2.2. Fit Indices for Five Hypothesised Models, with Comparisons Between Models, n=543, all anxious

Model	χ^2_{SB}	Df	p	CFI	RMSEA	90% Confidence Interval of RMSEA	SRMR	Comparison	$\chi^2 \Delta$	Df Δ	P of χ^2 change
Null model	24679	703									
Model 1: 1 factor	3006	665	<.001	0.91	0.081	0.078 – 0.084	0.073	Model 1 versus model 3	1322	16	<.001
Model 2: 6 uncorrelated factors	3327	665	<.001	0.89	0.086	0.083 - 0.089	0.210	Model 2 versus model 3	1643	5	<.001
Model 3: 6 correlated factors	1684	650	<.001	0.95	0.054	0.051 – 0.057	0.066	Null model versus model 3	23031	53	<.001
Model 4: 6 first-order factors and 1 higher-order factor*	1737	659	<.001	0.94	0.055	0.052 – 0.058	0.080	Target coefficient = 0.97			

*Note: in model 4, PSI's were artificially fixed at >.001, due to negative variance estimation

Model 2: six uncorrelated factors

For this model, all items loaded significantly on their hypothesized factor, with completely standardized factor loadings ranging from 0.31 to 0.81 (median at 0.60). However, the CFI was lower than 0.90, the χ^2 value was large, and the RMSEA exceeded the required 0.05 (see table 2.2), thus providing evidence that an uncorrelated six-factor model did not describe the data adequately.

Model 3: six correlated factors.

The completely standardized factor loadings for the six, correlated factor model ranged from 0.27 to 0.77 (median at 0.58). The complete table with all factor loadings can be obtained from the first author. Even though the χ^2 value was large, the goodness of fit indices showed a satisfactory fit for the data, with CFI greater than 0.90, the RMSEA close to 0.05, and the SRMR at 0.07. Given that the χ^2 value is affected by sample size, and that the other indices give support for the hypothesized model, it is concluded that this model provided a relative good fit for the data of anxiety-disordered children.

Model 4: six correlated factors and one higher order factor
The fourth model examined whether the inter-correlation between the six factors could be explained by a higher order factor. In analysing this model, an improper solution was found, due to a non-positive definite Psi value. More precisely, in the estimated model, the generalized anxiety factor had a correlation higher than 1.00 with the hypothesized latent higher order factor, with negative variance. We decided to artificially fix the variance at >.00, and reconducted the analyses. This adapted model showed good test statistics: The completely standardized loadings of the 6 factors on the higher order factor were high, being 0.73 for social anxiety, 0.69 for separation anxiety, 0.83 for panic / agoraphobia, 0.71 for physical injury fears, 0.77 for obsessive compulsive disorder, and 1.00 for generalised anxiety disorder. The percentages of unique variance accounted for by each of the first factor order factors were: 47% for social anxiety, 52% for separation anxiety, 31% for panic / agoraphobia, 50% for physical injury fears, 41% for obsessive compulsive disorder, and 0% for generalised anxiety disorder.

Comparing models 1-4
Models 1 and 2 did not provide a good fit for the data. Models 3 and 4 described the data accurately. In order to test which model described the data most adequately, a target coefficient was computed, being the ratio between the chi-square value of Model 3 and Model 4. A target coefficient larger than 0.90 suggests that the second-order factor provides a good explanation for the covariance between first order factors (Marsh & Hocevar, 1985). In this case, the target coefficient was 0.97, suggesting that the inter-relationship between the dimensions of separation anxiety, social phobia, panic/agoraphobia, obsessive compulsive disorder and physical injury fears can be satisfactorily explained by a higher order factor indicative of general anxiety. However, model 4 has two important interrelated weaknesses: there was an artificial fixation of the variance (leading to less trust in the other estimations of the model), and generalised anxiety as a factor did not have any specific contribution to the higher order factor (which leads to interpretation problems). Therefore, model 3 was preferred over models 1, 2, and 4 in further analyses relating to factor structure and subscale scores.

Factorial Invariance
In order to examine factorial invariance across different samples, a Multiple Group Analysis was performed. In this approach, the strength of recurrence of defined factors in new populations, e.g. groups of different gender or age, is assessed. The percentage of variance that can be explained by the a priori defined factors is compared to the percentage found by exploratory factor analyses (PCA), which is (by definition) a maximum amount of variance that the data can explain. Small differences between these percentages indicate a good fit of the data to the proposed number of factors. As a rule of thumb, a decrease of 10% of the variance found in PCA is regarded as satisfactory difference. Next, Tucker's phi coefficient was computed for each factor. Phi test statistic is defined as measure of correspondence and values of .85 or higher provide confirmatory evidence for the hypothesized factor in other samples. For further details of the procedure the reader is referred to ten Berge (1986). Six intercorrelated factors were presumed in the confirmatory factor analyses (CFAs).

Factorial invariance in anxiety-disordered and community children
To examine the factorial invariance of the SCAS in anxiety-disordered and community children, confirmatory analyses were conducted on the sample of 565 anxious children and the 654 community children separately. In the anxiety-disordered group, CFA based on the six hypothesized factors revealed a percentage of explained variance of 46.7%, whereas the maximum amount of explained variance through PCA was 49.3%, indicating that there was a good fit. Tucker's phi coefficients were highly satisfactory, ranging from 0.90 to 0.96 with a mean of 0.93. In the community group, the maximum amount of variance explained through PCA was 42.2%, whereas CFA based on the six hypothesized factors was 39.1%: an absolute difference in percentage explained variance of 3.1%. Tucker's phi coefficients were satisfactory, with values ranging from 0.88 to 0.93 (mean 0.91). These findings provide evidence that the original 6-factor structure, consistent with DSM-IV, is invariant across a group of anxiety-disordered children as well as a community sample.

Factorial invariance with regard to age, gender, and country
Tests of factorial invariance were conducted across gender, age and country of residence groups, however these were restricted to the anxiety-disordered children (n=565). With regard to gender, in the male sample (n=303) 49.6% of variance was explained through PCA and 46.4% through CFA. The mean phi coefficient was 0.92. In girls (n=262), 50.2% of variance was explained through PCA and 47.2% through CFA. The mean phi coefficient was 0.92. Two age groups were formed, one from 7-11 years and the other from 12-16 years. In the younger group (n=371), PCA explained 48.1% of the variance and 45.5% through CFA. The mean phi coefficient was 0.94. In the older group (n=172), 54.2% of explained variance was obtained through PCA and 50.0% through CFA, and a mean phi coefficient of 0.91 was found for the subscales. In the Dutch group (n=84) the percentage of explained variance was 53.4% through PCA and 47.6% through CFA, and the mean of phi coefficients for the subscales was 0.89. In the Australian group (n=481), 50.0% explained variance was obtained through PCA, versus 47.4% through CFA. The mean of phi coefficients was 0.93 for the subscales. In all, there was an absolute difference of percentage of explained variance of 2.6 - 5.8% (mean 3.4%) between the maximum possible percentage (through PCA) and the hypothesized division of items in correlated factors (CFA). All phi values were above 0.85.
These results indicate that the 6 factors of the SCAS are adequately invariant across age, gender, and the two countries studied in anxiety-disordered children.

Reliability
In order to evaluate the reliability of the hypothesized subscales, reliability coefficient omega was computed for each subscale separately as well as for the correlated six-factor model (MacDonald, 1999). Coefficient omega is recommended for measures that are not unidimensional, and is defined as the ratio of the item's variance due to the common attribute (the subscale) to its total variance. Omega is said to be a more accurate estimation of reliability than Cronbach's alpha, which is considered to be a conservative lower bound of reliability. In the anxiety-disordered group (n=543), the following omega's were found: Panic attack and agoraphobia: 0.82, Separation anxiety disorder: 0.76, Social phobia: 0.76, Physical

injury fears: 0.55, Obsessive-compulsive disorder: 0.77, and Generalized anxiety disorder: 0.80. For the multifactorial scale, overall omega was 0.95.The SCAS subscales were highly intercorrelated, with correlations ranging from 0.33 to 0.69, with the median at 0.48. The table with all intercorrelations can be obtained from the first author.

Factor scores versus sum scores in further analyses

LISREL output provides factor scores that represent an individual's score on the factor, taking into account measurement error and covariances among factors. In these scores, items are differently weighted into the final factor score. In conventional statistics, however, one would simply add up the different scores on the items of each factor (with every item contributing equally to the sum score), and this sum score then represents the individual's score on the factor. The advantage of the LISREL computed factor scores is that they describe the data more adequately: they represent model-based scale values. However, they have a major practical disadvantage in that in clinical practice, it is easier to simply compute a total score by adding the raw scores from items (otherwise one would always need a computer program to compute the subscale scores), and the sum scores are easier to interpret. Therefore, we decided to compute both the factor scores and the sum scores, in order to check for major differences in further results with regard to validity issues. Factor scores appeared to be highly correlated with the sum scores, ranging from 0.97 to 0.99. Given the huge practical advantages of sum scores and for ease of interpretation, it was decided to report the psychometric results using simple sum scores in the sequel.

Convergent and divergent validity

Correlations were computed between the SCAS and several other scales that are claimed to measure similar or related constructs (FSSC-R, RCMAS, CBCL-int, SCAS-p, CATS-threat subscales), and scales that theoretically measure different constructs (CBCL-externalising scores, CDI, CATS personal loss and failure, CATS hostile intent). As hypothesized, for the anxiety-disordered sample, the correlations between the SCAS and other child self-report measures of anxiety (FSSC-R and RCMAS) were high, 0.75 and 0.74, respectively. The threat related subscales of the CATS were also strongly correlated with the SCAS: 0.70 for Physical threat and 0.57 for Social threat.

With regard to divergent validity in child measures, the SCAS correlated at a lower level with those measures purporting to measure other constructs, albeit still significantly for all variables. The correlation between the SCAS and CDI (0.61) was significantly lower than the correlation between the SCAS and the RCMAS (0.75), $Z=10.65$, $p<.001$, (Meng, Rosenthal, & Rubin, 1992). In the comparative analyses with regard to the CATS, a mean threat score was computed (the mean score between CATS social threat and CATS physical threat). The correlation between the SCAS and the CATS-hostile intent scale ($r=.33$) was significantly lower than with the CATS-threat subscale ($r=0.69$;$Z=10.1$, $p<.001$). Similarly, the correlation between the SCAS and the CATS personal loss and failure ($r=.54$) was significantly lower than with the SCAS-threat subscale ($Z=6.67$, $p<.001$).

With respect to parent measures, the SCAS child report correlated quite strongly with the

corresponding parent measure, the SCAS-p (r=0.52). Further analysis showed that the correlation between SCAS and CBCL-int (r=0.27) was significantly higher than the correlation between SCAS and CBCL-ext (r=0.12; Z=3.15, p<.001), providing evidence for both divergent and convergent validity.

Effects of age, gender, and country

Sample 1: Anxiety-disordered children (n=543)

Total and subscale SCAS scores were compared across age groups, genders, and country of residency. Since we did not have enough data to report mean scores on SCAS subscales for each year in age separately, two age groups were formed, dividing the sample in younger (7-11 years; n=386) and older (12-16 years; n=179) children. Table 2.3 provides the descriptives of the subscales by age group and gender. For the clinical sample, there was a significant effect for gender for total score and all subscale scores, with the exception of obsessive-compulsive symptoms. In all instances girls reported higher scores than did boys. Comparisons across age groups showed that younger children reported significantly higher levels of separation anxiety and fears of physical injury, but lower levels of social anxiety than older children. No age differences were evident for other subscales or the total SCAS score. There were no significant main effects for country of residence.

Sample 2: Community children (n=654)

In the community sample, equivalent analyses were conducted. Table 2.3 summarises the findings with regard to age and gender for each subscale. In terms of gender effects, the pattern of results closely mirrored those for the clinical sample. However, in terms of age there were significant effects for all subscales and the total scores. In the community sample, younger children tended to report higher scores on the total score and all subscales other than social phobia. There were no significant main effects relating to country of residence.

Sensitivity and specificity of the SCAS: discrimination between community sample and diagnostic groups

To evaluate whether the SCAS can discriminate between the community sample and diagnostic groups, several subgroups were defined (e.g. a subgroup with SAD as a primary or secondary disorder versus a subgroup with an anxiety disorder, but without SAD as a primary or secondary disorder). Two types of analyses were conducted. The first were Helmert contrast analyses that were run for each diagnosis separately on the analogous subscale, differentiating between anxious children with that diagnosis (+1), anxious children without that diagnosis (0), and children from the community sample (-1). Table 2.4 shows the results of these analyses. The contrasts showed significant discrimination between groups for all subscales. Effect sizes were strongest for separation anxiety, with small but significant effects for the remaining subscales.

The second analyses were a more stringent way to establish construct validity, namely Receiver Operating Characteristics (ROC) analyses. These analyses were developed in World

Table 2.3. Descriptives of SCAS Subscales in Anxiety Disordered Children (n=543) and Community sample (n=654) per Age Group and Gender

		Children with anxiety disorders			Community children		
		7-11 years	12-16 years	2 (age group) x 2 (gender) ANOVAs	7-11 years	12-16 years	2 (age group) x 2 (gender) ANOVAs
Separation anxiety, 6 items	Boys	6.4 (4.1)	4.0 (3.5)	Age: $F(1,541) = 40.0$ $p<.001$ Gender: $F(1,541) = 17.6$, $p<.001$ Age x Gender: $F(2,540) = 0.0$, $p<.98$	2.4 (2.6)	1.5 (1.7)	Age: $F(1,652) = 33.8$, $p<.001$ Gender: $F(1,652) = 30.6$, $p<.001$ Age x Gender: $F(2,651) = 0.65$, $p<.42$
	Girls	7.9 (4.4)	5.6 (3.7)		3.6 (2.7)	2.4 (1.9)	
Social phobia, 6 items	Boys	4.9 (3.7)	5.7 (3.7)	Age: $F(1,541) = 13.1$, $p<.001$ Gender: $F(1,541) = 27.4$, $p<.001$ Age x Gender: $F(2,540) = 1.3$, $p<.26$	3.7 (2.4)	3.8 (2.5)	Age: $F(1,652) = 15.3$, $p<.001$ Gender: $F(1,652) = 32.8$, $p<.001$ Age x Gender: $F(2,651) = 1.6$, $p<.20$
	Girls	6.3 (3.9)	8.0 (4.0)		5.2 (3.0)	5.3 (2.9)	
Generalized anxiety, 6 items	Boys	6.5 (3.9)	6.5 (4.1)	Age: $F(1,541) = 2.2$, $p<.14$ Gender: $F(1,541) = 18.4$, $p<.001$ Age x Gender: $F(2,540) = 1.8$, $p<.18$	4.3 (2.6)	3.9 (2.3)	Age: $F(1,652) = 6.6$, $p<.01$ Gender: $F(1,652) = 28.2$, $p<.001$ Age x Gender: $F(2,651) = .37$, $p<.54$
	Girls	7.6 (4.2)	8.6 (4.0)		5.5 (3.0)	4.9 (2.2)	
Panic / agoraphobia, 9 items	Boys	4.2 (4.4)	4.3 (4.1)	Age: $F(1,541) = 2.5$, $p<.12$ Gender: $F(1,541) = 16.9$, $p<.001$ Age x Gender: $F(2,540) = 2.2$, $p<.13$	2.2 (2.7)	1.8 (2.2)	Age: $F(1,652) = 11.4$, $p<.001$ Gender: $F(1,652) = 27.2$, $p<.001$ Age x Gender: $F(2,651) = 2.3$, $p<.13$
	Girls	5.4 (4.8)	6.5 (4.9)		3.7 (3.4)	2.6 (2.5)	
Physical injury fears, 5 items	Boys	4.0 (3.0)	3.0 (2.5)	Age: $F(1,541) = 7.2$, $p<.01$ Gender: $F(1,541) = 15.2$, $p<.001$ Age x Gender: $F(2,540) = 0.88$, $p<.35$	2.1 (2.0)	1.9 (1.8)	Age: $F(1,652) = 5.5$, $p<.02$ Gender: $F(1,652) = 58.3$, $p<.001$ Age x Gender: $F(2,651) = 1.0$, $p<.32$
	Girls	4.8 (2.9)	4.3 (2.9)		3.5 (2.3)	3.1 (1.9)	
Obsessive compulsive disorder, 6 items	Boys	5.5 (4.0)	5.1 (3.8)	Age: $F(1,541) = 0.66$, $p<.42$ Gender: $F(1,541) = 1.7$, $p<.19$ Age x Gender: $F(2,540) = 0.03$, $p<.87$	4.0 (3.2)	3.3 (2.5)	Age: $F(1,652) = 10.6$, $p<.001$ Gender: $F(1,652) = 1.2$, $p<.27$ Age x Gender: $F(2,651) = 0.08$, $p<.78$
	Girls	5.9 (4.1)	5.6 (3.9)		4.3 (3.0)	3.5 (2.7)	
Total, 38 items	Boys	31.4 (17.9)	28.7 (16.9)	Age: $F(1,541) = 0.30$, $p<.59$ Gender: $F(1,541) = 25.5$, $p<.001$ Age x Gender: $F(2,540) = 1.3$, $p<.26$	18.8 (11.6)	16.2 (9.4)	Age: $F(1,652) = 13.2$, $p<.001$ Gender: $F(1,652) = 46.6$, $p<.001$ Age x Gender: $F(2,651) = .72$, $p<.40$
	Girls	37.9 (18.0)	38.8 (17.8)		25.8 (13.4)	21.7 (10.2)	

Table 2.4. Construct validity: Means and Standard Deviations of Subgroups on Five Subscales and Total Scale and Helmert Contrast Test Statistics for Between Group Differences

	N	SCAS subscale	Helmert Contrast Analysis F, p, effect size partial eta squared
		Separation anxiety subscale	
Community children	654	2.6 (2.4)	$F(2,1194) = 281.4$, $p<.001$, η_p^2=0.320
Anxious with SAD in profile	208	8.5 (4.1)	
Anxious, no SAD in profile	335	5.0 (3.8)	
		Generalized anxiety subscale	
Community children	654	4.7 (2.7)	$F(2,1194) = 84.9$, $p<.001$, η_p^2=0.124
Anxious with GAD in profile	358	7.5 (3.9)	
Anxious, no GAD in profile	185	6.5 (4.3)	
		Social phobia subscale	
Community children	654	4.5 (2.8)	$F(2,1194) = 39.5$, $p<.001$, η_p^2=0.062
Anxious with SoPh in profile	271	6.6 (4.2)	
Anxious, no SoPh in profile	272	5.3 (3.6)	
		Panic / agoraphobia subscale	
Community children	654	2.7 (2.9)	$F(2,1194) = 103.3$, $p<.001$, η_p^2=0.148
Anxious with Pan / Ag in profile	37	10.5 (4.9)	
Anxious, no Pan / Ag in profile	506	4.6 (4.5)	
		Obsessive compulsive subscale	
Community children	654	3.9 (2.9)	$F(2,1194) = 77.3$, $p<.001$, η_p^2=0.115
Anxious with OCD in profile	62	9.1 (4.5)	
Anxious, no OCD in profile	481	5.1 (3.7)	
		Total scale	
Community children	654	21.1 (12.1)	$F(2,1194) = 221.4$, $p<.001$, η_p^2=0.156
Any anxious	543	34.2 (18.2)	

Note SAD = separation anxiety disorder, GAD = generalized anxiety disorder, SoPh = social phobia, Pan / Ag = panic / agoraphobia, OCD = obsessive compulsive disorder

War II in the field of signal detection theory, and were used for the analysis of radar images. This procedure required high sensitivity and specificity of the radar operator, wanting to distinguish an enemy target from friendly ships or just noise. Later, these analyses were applied for interpreting medical test results. By nature, hypothesized subgroups in ROC-analyses are strict categories, without any overlap between categories. Therefore, ROC analyses were not allowed for the community sample versus the clinical sample, since a community sample includes clinically anxious children. An ROC curve is a plot of the true positive rate (sensitivity) against the false positive rate (1-specificity) for the different possible cut points of a diagnostic test. The area underneath the curve is calculated, and an area statistic is provided, with values of .90-1.00 being excellent, .80-.90 good, .70-.80 fair, .60-.70 poor, and .50-.60 not acceptable. The area statistic is an indication of the sensitivity and specificity of the measure. In comparing the subgroups of children with a specific disorder and without that specific disorder, the following area statistics were found: Panic and agoraphobia: 0.83 (95% confidence interval .78-.88) Separation anxiety disorder: 0.74 (95% confidence interval 0.69-0.78), Social phobia: 0.59 (95% confidence interval 0.54-0.64, Obsessive compulsive disorder: 0.75 (95% confidence interval 0.69-0.82, and Generalized

anxiety disorder: 0.58 (95% confidence interval 0.53-0.63). These results indicate that the subscales Panic and agoraphobia, Obsessive-compulsive disorder, and Separation anxiety disorder were fairly sensitive and specific to their analogous child diagnosis, whereas the subscales Social phobia and Generalized anxiety were not.

Discussion

The primary goal of the study was to evaluate the psychometric properties of the SCAS in a large sample of anxiety-disordered children. Also, some interesting theoretical issues arose in the evaluation of the measure, the implications of which will also be discussed.

Anxiety as a unidimensional or multidimensional concept

With regard to the factor structure and the question of unidimensionality versus multidimensionality, we investigated whether the six-factor structure, that was found and replicated in large community samples, also adequately described the data in a large clinical sample of anxiety-disordered children. In a confirmatory factor analysis, support was found for the same six correlated factors previously identified in community samples, broadly consistent with the diagnostic categories proposed by DSM-IV. Thus, also in a clinical population, children's anxiety symptoms appear to reflect six separate, but inter-correlated subscales that address symptoms of separation anxiety, social phobia, generalized anxiety, panic / agoraphobia, obsessive compulsive disorder, and physical injury fears. As predicted, the intercorrelations between the factors were high, suggesting considerable overlap in symptoms between the anxiety disorders, and consistent with high levels of comorbidity of anxiety disorders (Last et al., 1987). In addition, it was examined whether a higher-order factor could explain the covariance between the six factors. Then, a problem arose in estimating the parameters for the model: the intercorrelation between this hypothesized higher-order factor and the factor composed of generalized anxiety symptoms was spuriously high. After fixing the variance of the generalized anxiety factor to zero, the model of 6 interrelated anxiety factors and one higher order factor fit the data adequately. However, the generalised anxiety factor did not have any specific contribution to the higher-order factor. There are several explanations for this complete overlap between the generalized anxiety and higher order factors. One explanation is that the items for generalized anxiety disorder in the SCAS are formulated in a general way, more closely to the (former) classification of overanxious disorder. Examples of items include 'I worry about things', 'I feel afraid', and 'When I have a problem, I feel shaky'. These symptoms may indeed be reported by many anxiety-disordered children, and not just by children with GAD. Perhaps, by including items that are more specific to generalized anxiety disorder, the scale's specificity could be enhanced. A relevant item may be 'I cannot stop myself from worrying'. Alternatively, one could consider to leave this subscale intact and relabel it into 'general anxiousness', and construct a new subscale for generalized anxiety that is formulated more closely to DSM. Chorpita and collaegues (2000) indeed successfully added some worry-items to the SCAS in their development of the Revised Children's Anxiety and

Depression Scale (RCADS). Another explanation is that worry in children is not restricted to generalized anxiety disorder, but also occurs in other anxiety disorders (Weems, Silverman, & La Greca, 2000), which makes worry more of a symptoms than a separate anxiety disorder. Also in studies with adults, GAD was strongly related to the non-specific dimension of negative affectivity (Brown et al., 1998). Indeed, it has been suggested that GAD may be the basic anxiety disorder, since it is composed of features like chronic worry, physical sensations, and negative affect, that are present in all emotional disorders (Brown et al., 1998); Further analyses revealed that the six correlated factor structure was invariant across age, gender, and country. Even though there were significant differences in mean values of SCAS-reports by gender and age groups, it appears that the factorial structure of anxiety symptoms is consistent for boys and girls, across younger and older children, and in the two countries.

Internal consistency

The total scale of the SCAS showed high internal consistency. The subscales also showed acceptable levels of internal consistency, with an exception for the subscale physical injury fears. This subscale contains only five items and is not only the shortest subscale, but also the most heterogeneous one. It consists of items reflecting different specific phobias, namely fear of spiders, dogs, heights and elevators, doctors and dentists, and the dark. Spence (1998) argued that it may not be meaningful to search for a specific phobia factor, since these fears do not necessarily co-occur. This finding of low internal consistency is consistent with earlier studies on the SCAS in community samples (Spence, 1998; Muris et al., 2000a; Muris et al., 2002; Chorpita et al., 2000). Increasing the breadth of this scale, by including several other specific fears such as fears of insects, loud noises, storm, or injections, might help to include the internal consistency of this scale. One could also argue to drop all items on specific phobia. However, these fears are very common in children, so if we want to assess a broad scope of anxiety symptoms in both community and clinical samples, then symptoms of the specific phobias must be included.

Convergent and divergent validity

With regard to convergent validity, the SCAS correlated strongly with both the two traditional child self-reports, the RCMAS and the FSSC-R. This finding is consistent with those in community samples (Muris et al., 2000a). In line with our expectations, the SCAS correlated highly with the CATS threat subscales, subscales reflecting the amount of negative automatic thoughts in children with regard to physical and social threat. With regard to parent measures, the SCAS child report correlated highly with the SCAS parent report, but only moderately with the internalizing subscale of the CBCL. The lower than expected correlation between the SCAS and the CBCL is probably due to differences in informants, question content and response formats. With regard to divergent validity, the correlation between the CDI, a self report measure of depression, and the SCAS was significantly lower than that associated with the child-report measures of anxiety (RCMAS and FSSC-R). The relationship between the SCAS and CDI in the clinically anxious group was consistent with that reported in community samples of adolescents (Spence et al.,

2003). This finding is consistent with the relatively high comorbidity between anxious and depressive symptomatology (Last et al., 1987), and may also be indicative of a common underlying construct such as negative affectivity (e.g. the tripartite model of Clark et al., 1991). Also, the SCAS correlated higher with automatic thoughts related to social and physical threat than to automatic thoughts related to personal loss and failure (that are supposed to be associated more with depression) and thoughts of hostile intent (that are supposed to be more related to behaviour disorders).

Effects for age and gender

Girls in both the clinical and the community sample reported significantly higher levels of anxiety symptoms on all subscales except obsessive compulsive disorder. This effect was present across both younger and older children and is consistent with the findings of Spence (1998) and Spence et al., (2003) in large community samples.

In the community sample, all subscales were related to age, whereas in the clinical sample, some scales were independent of age. Younger anxious children reported more symptoms of separation anxiety and physical injury fears, and older anxious children reported more symptoms of social phobia. There was no difference between younger and older anxious children in their reports on generalized anxiety, panic / agoraphobia, or obsessive compulsive disorder. In total, younger and older clinically anxious children reported similar levels of anxiety symptoms, albeit with a different pattern of results across subscales. The findings in the community sample were in line with previous findings, with younger children reporting a higher level of symptoms than older children (e.g. Spence, 1998; Ollendick, Yang, King, Dong, & Akande, 1996).

Discriminant validity

Clinically anxious children reported significantly higher levels of anxiety than community children on all subscales. This finding is in line with earlier results of Spence (1998), where a smaller group of anxious children reported higher levels of anxiety than community children, especially on the subscale of their anxiety disorder.When evaluating the validity of the subscales relative to the diagnoses of the children, we found that children with a specific diagnosis reported higher levels of symptoms in the subscale of that diagnosis than clinical children without that diagnosis or children in the community sample. This provided some evidence of construct validity. When conducting more stringent analyses, the subscales of Social phobia and Generalized anxiety did not discriminate well between children with or without that diagnosis. Children with panic / agoraphobia, separation anxiety disorder, or obsessive compulsive disorder, on the other hand, could satisfactorily be distinguished from children with other anxiety disorders, based on their respective subscale. Overall, it would not be appropriate to rely on a child self-report questionnaire such as the SCAS to establish a clinical diagnosis.

Anxiety as a dimensional or a categorical concept

There are several issues that arise in interpreting the results above. The main issue is the discussion on dimensional versus categorical conceptualisation of anxiety disorders. The

current version of DSM forces us to dichotomous classification: children either have a disorder or not. It does not take into account that children may have symptoms of other diagnostic categories, or that children within one category may differ considerably in symptom profiles from one another. The current findings could be a result of the artificial cut-off between a disorder or no disorder. In the ongoing discussion and the process of the development of a new diagnostic system (DSM-V; meant to appear around 2010), some researchers and experts have suggested adapting the current classification system to a dimensional system. This would acknowledge 'the continuum nature of symptoms. In particular, it may be helpful to find ways to denote a distinction between mild and borderline cases and clear-cut or severe cases' (quote from the Research Agenda for DSM-V; American Psychiatric Association, 2002). Advantages of a more dimensional framework are 1) that patients do not have to fit exact prescribed stereotypes, and 2) that the profile of patients who are now meeting criteria for various disorders or who are in between two categories, can be portrayed more accurately (Rounsaville et al., 2002).

Limitations

Limitations to this study include the following issues. First, the research groups involved in the study used slightly different recruitment strategies, especially for their community children. Children filled out questionnaires in the clinics, at home, and in schools. Further analyses showed that there were no differences between the groups in terms of factorial invariance or SCAS subscale scores, which indirectly provides support that the SCAS may be robust to these differences in administrating the questionnaire.

A further limitation is that evaluation of the validity of the SCAS largely depended on the reliability and validity of the clinical interview against which it was compared. The ADIS-C has been reported to have good test-retest reliability and good inter-rater reliability for specific anxiety diagnoses (Rapee, Barrett, Dadds, & Evans, 1994; Silverman & Eisen, 1992; Silverman et al., 1988; Silverman, Saavedra, & Pina, 2001). However, kappa's are generally in the range of .7 to .8, still indicating a reasonable proportion of variance accounted for by error. Therefore, diagnostic instruments such as the ADIS-C cannot be used as an absolute standard and this needs to be taken into account when interpreting data such as those in the current study.

Future research

For future research it is recommended to include a control group with different psychopathology. Even though this study showed that the SCAS subscales discriminate well between anxious and community children, there are no data available yet on whether the SCAS discriminates between children with anxiety disorders and children with other disorders, such as ADHD or depression. Earlier research has shown that several of the standard measures of anxiety have difficulty distinguishing anxious children from those with other forms of psychopathology (Perrin & Last, 1992) so this is an essential feature for any newer measure of child anxiety.

In short, this study provides evidence for the solid psychometric properties of the SCAS. In previous research, the SCAS has also shown its clinical value in at least three therapy

outcome-studies; one specifically targeting children with social phobia (N = 50: Spence, Donovan & Brechman-Toussaint, 2000), and two targeting children with a range of anxiety disorders (N=79; Nauta, Scholing, Emmelkamp, & Minderaa, 2003; N=210: Abbott, Gaston, & Rapee, 2002). In all of these studies, the SCAS showed a significant decrease in anxiety symptoms after treatment and at follow-up.

Conclusions

In summary, this study has demonstrated that the SCAS child self-report that was originally developed on community samples also has good psychometric properties in a large clinical sample of anxiety-disordered children across a wide age range. The SCAS was factorial invariant across a clinical and a community group, showed satisfactory to excellent internal validity, good convergent and divergent validity, and discriminated adequately between anxious and community children. The mean scores on the subscales corresponded with the analogous diagnostic classification. All subscales discriminated significantly between clinically anxious children with the specific diagnosis in their profile, compared to anxious and community children who did not. However, more stringent ROC analyses indicated that the Social phobia and Generalized anxiety subscales did not satisfactorily distinguish anxiety disordered children with these specific disorders from children with other anxiety disorders. It is concluded that, although the SCAS represents a reliable and valid indicator of anxiety disorder symptoms in children and adolescents, it would not be appropriate rely on a self-report questionnaire such as the SCAS in lieu of a standardized structured interview in determining anxiety disorder diagnostic status.

Chapter 3

A parent-report measure of children's anxiety: Psychometric properties and comparison with child-report in a clinical and nonclinical sample

Nauta, M.H., Scholing, A., Rapee, R.M., Abbott, M., Spence, S.H., & Waters, A. (2004) Behaviour Research and Therapy, 42 (7), 813-839

Abstract

This study examined the psychometric properties of the parent version of the Spence Children's Anxiety Scale (SCAS-P). 484 parents of anxiety disordered children and 261 parents in a normal control group participated in the study. Results of confirmatory factor analysis provided support for six intercorrelated factors, which corresponded with the child self-report as well as with the classification of anxiety disorders by DSM-IV (namely separation anxiety, generalized anxiety, social phobia, panic / agoraphobia, obsessive compulsive disorder, and fear of physical injuries). A post-hoc model in which generalized anxiety functioned as the higher order factor for the other five factors described the data equally well. The reliability of the subscales was satisfactory to excellent. Evidence was found for both convergent and divergent validity: the measure correlated well with the parent report for internalizing symptoms, and lower with externalising symptoms. Parent-child agreement ranged from .41 to .66 in the anxiety-disordered group, and from .23 to .60 in the control group. The measure differentiated significantly between anxiety-disordered children versus controls, and also between the different anxiety disorders except Generalised anxiety disorder. The SCAS-P is recommended as a screening instrument for normal children and as a diagnostic instrument in clinical settings.

Introduction

In the past few years, research on the assessment of childhood anxiety has focused on constructing child self-report questionnaires that are related to the commonly used classification system of DSM-IV (American Psychiatric Association, 1994). Prior to this, questionnaires did not examine specific anxiety disorders, but were typically designed to measure indicators of anxiety in general. Moreover, they were generally derived from adult anxiety measures rather than being based on child specific items.

Child self-reports related to DSM-IV

The need for a child self-report questionnaire following the DSM-classification was evident and led to the development of measures such as the Spence Children's Anxiety Scale (SCAS; Spence, 1997) and the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997). Both instruments have recently been studied on their psychometric qualities, both separately as well as in relation to each other. Satisfactory reliability is a basic and essential requirement for an assessment instrument. For individual assessment purposes, Cronbach's alpha's of at least 0.80 have been recommended, whereas for research purposes reliabilities of .70 or higher may suffice (Nunnally, 1978). Further, a sound instrument should preferably show different types of validity. Convergent validity should be reflected by relatively high correlations with instruments that are meant to measure similar constructs whereas divergent validity should be demonstrated by relatively low correlations with instruments measuring other variables. In addition, clinical practice requires that an instrument can differentiate between anxiety disorders and normal controls, and ideally also between the distinct anxiety disorders.

The results for the SCAS and the SCARED produced support for the classification of anxiety disorders according to the DSM-IV and demonstrated their psychometric properties to be acceptable (Essau et al., 2002; Muris et al., 2002; Muris et al., 2002).

SCAS and SCARED

Although the SCAS and the SCARED display many similarities, they also show some differences. First, the SCAS was developed as a screening instrument in normal populations, whereas the SCARED was developed in clinical populations. Second, the SCAS contains 38 items and was intended to measure symptoms of the following DSM-IV anxiety disorders: 1) panic disorder / agoraphobia, 2) generalized anxiety disorder, 3) social phobia, 4) separation anxiety disorder, 5) obsessive compulsive disorder, and 6) some specific fears, mainly fear of physical injury / animals. The original SCARED, consisting of 85 items and subsequently reduced to 41 items (Birmaher et al., 1999), was developed to measure symptoms of 1) panic disorder, 2) generalized anxiety disorder, 3) social phobia,

4) separation anxiety disorder, and 5) school phobia (the latter not being a DSM-IV anxiety disorder). So, despite fewer items, the SCAS shows a broader scope and a closer connection with the DSM-IV structure than the original version of the SCARED. This situation inspired some researchers (Muris et al., 1999; Muris et al., 2000) to present adaptations of the SCARED, including 66 items, with symptoms of obsessive compulsive disorder and PTSS added, but in recent studies only the 41-item, five subscale version is used. Third, the correlation between the social phobia subscales of both questionnaires appeared to be unexpectedly low (r=0.37 in Muris et al., 1999; r=0.58 in Muris et al., 2002; r=0.59 in Essau et al., 2002), suggesting that they measure different aspects of social phobic fears; the SCARED predominantly measures fear of meeting unfamiliar people, whereas the social phobia items in the SCAS are more closely related to the DSM-IV social phobia criteria, such as fear of social or performance situations and fear of negative evaluation (Essau et al., 2002). Finally, the SCAS is rated on a four-point scale with a broader range of possible answers (ranging from 0=never to 3=always), while the present 41-item version of the SCARED is rated on a three-point scale (0=almost never, 1=sometimes, 2=often). In sum, both questionnaires have their own merits for the assessment of anxiety symptoms, although the SCAS seems to be broader in scope and in range in severity of symptoms.

Parent measures on children's anxiety symptoms

The SCAS and the SCARED have, so far, been limited to child self-report. In the assessment of childhood disorders, it is both common and recommended to include multiple informants, most commonly children, parents and teachers. Each informant may contribute information about different aspects of the disorder, thus complementing each other. Diagnostic interviews most often include both parents and children (e.g. the Anxiety Disorders Interview Schedule Child and Parent Version: ADIS-C/P; Albano et al., 1994). Also, some well-known and widely used 'general' child behaviour questionnaires have both child and parent versions and include some items relating to anxiety (e.g. the Youth Self Report and the Child Behaviour Checklist: YSR and CBCL; Achenbach, 1991). However, both parent diagnostic interviews, such as the ADIS-C/P and more general parent questionnaires for child behaviour, such as the CBCL, have their limitations in the clinical assessment of childhood anxiety. Structured interviews are time-consuming and parent questionnaires such as the CBCL do not provide sufficient detail regarding specific symptoms of anxiety disorders. There is a need for a relatively quick, but sufficiently detailed, reliable and valid parent questionnaire that provides a screen to identify children and adolescents who show high levels of anxiety symptoms across a range of anxiety disorders, and for whom a more detailed structured, clinical interview may then be warranted.

Parent child agreement

The issue of agreement between parent and child report is notoriously problematic in clinical assessment, with correlations as low as 0.25 for parent-child agreement for some measures of child behaviour problems (Achenbach, McConaughy, & Howell, 1987). Parent-child agreement was found to be larger when the behaviour is observable (Jensen, Traylor, Xenakis, & Davis, 1988; March et al., 1997), and to be smaller for internalizing symptoms

than for externalising behaviour (Rey, Schrader, & Morris-Yates, 1992). In line with this, Birmaher et al. (1997) published some data about a parent version of the SCARED and reported a relatively low correspondence between parent and child: r=0.33 for the total scale, with the subscales ranging from r=0.20 for social phobia to 0.47 for SAD.
With regard to age, studies show contradictory findings, but Achenbach et al. (1987) concluded that parent child agreement is higher for younger children than for adolescents. Similarly, within the field of anxiety disorders lower age has been associated with higher parent-child agreement (Rapee et al., 1994).
Low correlations between child and parent reports do not automatically lead to the conclusion that the validity of the instruments is questionable. It must be noted that the measures often correlate well with other measures of the same construct when completed by the same informant. For instance, for the SCAS (child questionnaire), convergent validity was high with regard to another child self-report on anxiety, but weaker with regard to parental reports of the child's internalizing and withdrawal symptoms (Spence, 1998). One possible explanation for poor parent-child agreement is that parents and children are not assessing the same underlying constructs when they complete the questionnaire. Perhaps, parents and children conceptualise anxiety differently, leading to a different pattern of responses. Examination of the factorial structure of a measure across different informants may cast some light on this possibility. To date, studies examining the comparability of the factor structure in parent and child measures are scarce. Cole, Hoffman, Tram, and Maxwell (2000) found the factor structure in a global anxiety questionnaire, the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds et al., 1978), to be similar in child and parent reports, but not equivalent. They found three-factor solutions in both child and parent report, with two comparable factors, but the third factor was different for the different informants. Cole and collaegues (2000) suggested that parents and children focus on somewhat different aspects of anxiety and depression, originating from different underlying factors. Given that the RCMAS represents a general measure for child anxiety symptoms, it is possible that a questionnaire such as the SCAS that is based on well-defined clusters of symptoms will manifest more similar factors across informants.

Aims of the current study

Given the potential value of a parental questionnaire measure of childhood anxiety, as noted above, the present study was designed to examine the psychometric properties of the parent version of the SCAS. Factor structure and psychometric properties such as internal consistency, convergent and divergent validity were investigated. The study included two samples of Dutch and Australian normal and clinically referred children with a wide age range, different anxiety disorders, and a variety of co-morbid disorders.

Method

Participants

Participants in this study were children aged from 6-18 years and their parents. The groups consisted of anxiety-disordered children and normal controls, from three different settings: Macquarie University and Queensland University in Australia, and the University of Groningen in the Netherlands. The demographic variables of these six subgroups are shown in Table 3.1. The data from these groups were pooled into one anxiety-disordered group and one normal control group. In addition to comparisons between anxiety-disordered versus normal controls, differences between Australian and Dutch children were also investigated. The anxiety-disordered group consisted of 484 children, aged 6-17 years (mean age 10.4; SD=2.5). 264 children were male and 220 were female (respectively 55% and 45%). Primary diagnoses were separation anxiety disorder (n=95, 20%), generalized anxiety disorder (n=164, 34%), social phobia (n=137, 28%), specific phobia (n=49, 10%), anxiety disorder not otherwise

Table 3.1. Demographic variables

		Australian anxious Macquarie (n=380)	Australian anxious Queensland (n=22)	Dutch anxious (n=82)	Australian controls Macquarie (n=40)	Australian controls Queensland (n=104)	Dutch controls (n=117)
Age (SD)		10.3 (2.6)	10.2 (1.1)	11.0 (2.5)	10.9 (2.9)	10.6 (1.0)	12.4 (1.8)
Age range		6-17	9-12	7-17	6-17	9-12	8-18
Gender	male	210 (55.3%)	13 (59.1%)	41 (50%)	27 (67.5%)	42 (40.4%)	56 (47.9%)
	female	170 (44.8%)	9 (40.9%)	41 (50%)	13 (32.5%)	62 (59.6%)	61 (52.1%)
Marital status parents	married	312 (82.1%)	16 (72.7%)	70 (85.4%)	34 (81.6%)	68 (65.4%)	
	separated / divorced	51 (13.4%)	4 (18.2%)	5 (6.1%)	3 (7.5%)	25 (24%)	
	never married	6 (1.6%)	2 (9.1%)	2 (2.4%)	2 (5%)	8 (7.7%)	
	widowed	1 (0.3%)	-	1 (1.2%)	-	2 (1.9%)	
	unknown	10 (2.6%)	-	4 (4.9%)	1 (2.5%)	1 (1%)	117 (100%)
Family Composition	dual original	306 (80.5%)		70 (85.4%)	32 (80%)		
	single mother	48 (12.6%)		8 (9.8%)	3 (7.5%)		
	single father	1 (0.3%)		-	-		
	parent and stepparent	16 (4.2%)		1 (1.2%)	3 (7.5%)		
	unknown	9 (2.4%)	22 (100%)	3 (3.7%)	2 (5%)	104 (100%)	117 (100%)
Parental age	mother	41.3 (5.3)	-	41.4 (5.2)	40.6 (5.5)	-	42.3 (4.2)
	father	43.4 (5.9)	-	44.0 (5.8)	44.2 (6.1)	-	44.2 (4.0)
Primary diagnosis of child	SAD	62 (16.3%)	6 (27.3%)	27 (32.9%)	-		-
	GAD	139 (36.6%)	8 (36.4%)	17 (20.7%)	-		-
	SoPh	84 (26.1%)	6 (27.3%)	32 (39%)	-		-
	SpPh	40 (12.4%)	2 (9.1%)	-	-		-
	ANOS	2 (0.5%)	-	-	-		-
	Panic	13 (3.4%)	-	6 (7.3%)	-		-
	OCD	18 (4.7%)	-	-	-		-
	None	-	-	-	40 (100%)		-
	Unknown	-	-	-	-	104 (100%)	117 (100%)
Number of comorbid diagnoses	Mean (SD)	1.7 (1.4)	0.8 (0.4)	1.1 (0.8)	-	-	-
	Range	0-5	0-1	0-3	-	-	-

specified (n=2, 0.4%), panic disorder (n=19, 4%), and obsessive-compulsive disorder (n=18, 4%). Children had zero to five secondary diagnoses (mean 1.6, SD=1.3), including anxiety disorders, mood disorders, ADHD, and oppositional disorder. Most families were intact with both original parents living together (n=376, 78%), with other parents being single (n=57, 12%), or living with a new partner (n=17, 4%). Most parents were married (n=391, 81%). The majority of the sample was Australian (n=402; 83%) and the other children were Dutch (n=82; 17%).

The normal control group consisted of 261 children, of which 117 (45%) were Dutch and 144 (55%) were Australian. They were aged 6-18 years (mean age 11.5, SD=2.0). 125 children were boys (48%), and 136 were girls (52%). Data relating to family composition and parental marital status were not available for the normal control children.

Some analyses were conducted on the total sample (n=745). Overall, children were aged 6-18 years (mean age 10.8, SD=2.4), the sample had 389 boys (52%) and 356 girls (48%).

Measures

Spence Children's Anxiety Scale (SCAS; Spence, 1998)

The SCAS was developed to assess anxiety symptoms in children in the general population. The SCAS has 44 items on a 0 (never) to 3 (always) scale and consists of six subscales, namely Panic attack and agoraphobia (9 items), Separation anxiety disorder (6 items), Social phobia (6 items), Physical injury fears (5 items), Obsessive compulsive disorder (6 items), and Generalized anxiety disorder (6 items). Six items are positive worded filler items. The SCAS showed high internal consistency, not only for the total scale, but also for each subscale (Spence, 1998). The test - retest reliability over a six-month period was acceptable in a community sample. (Spence, 1998) reported the SCAS to show both convergent (with another child anxiety measure, namely the RCMAS (Reynolds et al., 1978) and divergent validity (with a child depression measure, namely the Child Depression Inventory (CDI; Kovacs, 1981).

Spence Children's Anxiety Scale for Parents (SCAS-P; Spence, 1999)

The items of the SCAS-P were formulated as closely as possible to the corresponding item of the child version of the SCAS. Items referring to an internal state (e.g. item 4, I feel afraid) were rephrased into observable behaviour for parents (e.g. My child complains of feeling afraid). The positive filler items were not included in the SCAS-P, leaving 38 items in the scale on the same 0 (never) to 3 (always) scale. All items are displayed in table 3.3. The Dutch translation of both the parent and child versions of the SCAS was conducted by the Dutch authors using a forwards and backwards translation method (Scholing, Nauta, & Spence, 1999a,b). Copies of the SCAS-P may be obtained from http://www2.psy.uq.edu.au/~sues/scas/. Copies of the Dutch translation may be obtained from the first author.

Child Behaviour CheckList (CBCL; Achenbach, 1991)

The CBCL is a commonly used parent measure to assess child behaviour problems. It includes 118 items addressing behavioural and emotional problems. Parents are asked to evaluate whether the behaviour is not true (0) for their child, somewhat or sometimes true

(1), or very true or often true (2), now or during the past six months. In this study, the internalizing subscale was used to evaluate convergent validity of the SCAS-P, and the externalising subscale for divergent validity. For reasons of comparability between the two countries in this study, t-scores were used in the analyses. The psychometric properties of this scale have been well established and the measure is widely used internationally.

The Anxiety Disorder Interview Schedule (ADIS C/P; Silverman et al., 1996)
The ADIS C/P is a semi-structured interview based on DSM-IV classification of psychopathology (American Psychiatric Association, 1994), and includes both a child and a parent interview. It addresses the following anxiety disorders: separation anxiety disorder, social phobia, generalized anxiety disorder, specific phobias, panic, agoraphobia, and obsessive-compulsive disorder. Furthermore, it allows for evaluation of depression, dysthymia, ADHD, oppositional disorder, and conduct disorder. The ADIS was used to establish diagnoses of the children from clinical subgroups. The clinician followed the ADIS C/P manual for the assignment of diagnoses (Albano & Silverman, 1994). If discrepancies were found between parent and child report, then procedures were followed as outlined in the ADIS C/P manuals. Additionally, the clinician gave severity scores to each diagnosis, with a range of 0 (no interference in daily life) to 8 (extreme interference in daily life). Severity scores of 4-8 indicate the presence of a disorder. The primary disorder was the disorder with the highest severity score. Other disorders, if present, were regarded as secondary diagnoses. Previous studies have shown moderate to high interrater-reliabilities for the diagnoses of the separate anxiety disorders using in the ADIS C/P (e.g., Rapee, Barrett, Dadds, & Evans, 1994; kappa ranging from .59 to .82;). Thus, inter-rater reliability of diagnoses was not established again for the present study.

Procedure

Macquarie clinically anxious group (N=380)
The children in this sample attended the Child and Adolescent Anxiety Clinic at Macquarie University for assessment and treatment. Parents contacted the clinic directly and were referred from a range of sources including general practitioners, school counsellors, media articles or word of mouth. All children were assessed by graduate students in psychology, under the supervision of experienced clinical psychologists. Assessment was based on both the Child and Parent versions of the ADIS C/P. Parents and children completed the questionnaire battery at home and brought the completed questionnaires to their initial assessment session. Parents were asked to help their child complete the questionnaires if necessary by reading the questions aloud, but were instructed not to interpret their child's responses.

Macquarie non-clinical controls (N=40)
The children in this sample were recruited through flyers in local businesses and media advertisements asking for confident and worry-free children between the ages of 7 and 16 years to act as research volunteers. First year psychology students at Macquarie University who were parents of children between the ages of 7 and 16 years were also recruited to the study and received course credit for their participation. Graduate students in psychology

interviewed all participants using parent and child versions ADIS C/P. Participants completed the questionnaire battery at home and returned their questionnaires at their interview session. Families were given 'thank you' packs that included vouchers for local businesses in appreciation for their time and effort in acting as research volunteers.

Queensland clinically anxious group (N=22)

The children in this sample were attending a university clinic for assessment of potential anxiety disorder and were referred by school guidance officers, GPs or parents in response to media coverage. Questionnaires were completed on an individual basis, with a researcher present. The parent version of the ADIS-C/P was administered in the clinic, with questionnaires being completed either in the clinic or at home and mailed back to the researchers. Written, informed consent was obtained from all parents and children.

Queensland normal controls (N=104)

Students in this sample attended a middle-income state primary school in a metropolitan area. Children completed the questionnaire on an individual basis, in the presence of a researcher. Items were read aloud for children in grade 4, and then as necessary for children in higher grades who experienced problems reading the items. Parent questionnaires were completed at home and returned by the child to the researcher. Inclusion/exclusions criteria required that children were free from intellectual impairment or a learning disorder (as reported by parents and teachers).

Dutch anxiety disordered children (N=82)

This sample was obtained from three different Dutch settings that included an outpatient clinic (Academic Centre for Child and Adolescent Psychiatry Groningen), a regional outpatient setting for mental health (Centre for Youth Mental Health Care Groningen) and the outpatient facility of the department of clinical psychology of the University of Groningen. Children were referred by their family physician or by parents in response to media (information on radio, in local newspapers, leaflets in schools and medical settings). Written, informed consent was obtained from all parents and those children aged 12 years and above. All children were diagnosed during regular intake evaluations by a psychiatrist, a child psychologist, social worker, or a supervised trainee. Subsequently, two trained clinicians interviewed the child and parents separately with the ADIS C/P. After the interview, children completed the questionnaires in the presence of a researcher who gave instructions to the child and could be asked for help if necessary.

Dutch normal control sample (N=117)

Seven schools in both rural and urban areas participated in this study. In six schools, children took an information leaflet home, asking for families to participate in the study. Families that returned the leaflet received questionnaires at home and sent back the completed forms. The seventh school agreed to have the children fill out the questionnaires in the classroom. The children took the parent questionnaires home, and asked the parents to return them to the investigator.

Results

Preliminary analyses

In the anxiety disordered group, 399 mothers and 322 fathers filled out the questionnaires independently, and 82 parents filled them out together. The normal control group had 40 mother reports, 18 father reports, and 221 reports of parents that filled out the questionnaires together. Father and mother scores on the subscales of the SCAS-P were highly correlated, with correlations varying from .51 (generalized anxiety) to .73 (separation anxiety). Correlations of .50 and higher indicate that the variables measure one concept and can be taken together (Briggs & Cheek, 1986). Therefore, we decided to use the mean scores of mother and father reports for further analyses, if both scores were available.
ANOVAs were performed to check whether the Australian and Dutch data differed on the SCAS-P, and no significant differences were found in the anxiety-disordered group. The Dutch normal control group showed significantly lower scores on the SCAS-P than both Australian normal control groups. The Dutch children were also older than the Australian children were. When corrected for age, we found no significant difference between the groups on the SCAS-P. Based on these findings, we decided to pool the data into two groups, namely anxiety disordered and normal controls. Children in the control group were significantly older than the anxiety disordered children (aged 11.5 (SD=2.0) and 10.4 (SD=2.5) respectively; $F(1,743)=36.9$, $p<.001$). There was no significant difference in gender ($\chi^2 = 3.0$, $p<.09$) between the two groups.

Confirmatory Factor Analysis

The starting-point for analysing the factor structure of the SCAS-P was the available empirical knowledge. The basis of today's empirical knowledge of the classification of anxiety disorders is the DSM-IV (APA, 1994). In prior research on the SCAS child measure Spence (1998) found evidence for six intercorrelated factors parallel to the DSM-IV classification of the childhood anxiety disorders, and for one higher order factor, suggesting that there may be one general underlying concept of anxiety. Rather than examining the factor structure of the parent measure using exploratory means, as one would do without any guiding theory or related empirical evidence, we hypothesized four models derived from the DSM-IV structure and the findings by Spence: (1) one factor, (2) six uncorrelated factors, (3) six correlated factors, and (4) six correlated factors and one higher order factor. These models were evaluated by the statistical package of LISREL. This model testing provides a technique to determine which model is the most accurate in describing the data. Because of the skewness and kurtosis in the data, we choose the parameter estimation that was most robust to non-normality: the robust maximum likelihood parameter using an asymptotic covariance matrix (Boomsma & Hoogland, 2001).
In LISREL, many goodness of fit indices are provided. The value of χ^2 is a likelihood ratio test statistic. A statistically significant χ^2 value that is large with regard to the degrees of freedom reveals a significant difference between the hypothesized model and the observed data, thus rejecting the null hypothesis that the model fits the data. The χ^2 value is known to

be dependent on sample size (e.g. Stevens, 1996) with models often being rejected in large samples. Other goodness of fit indices have been developed that are not or less dependent on sample size. The Normed Fit Index (NFI), Non-Normed Fit-Index (NNFI), and the Comparative Fit Index (CFI) were chosen for this study. Values of 0.90 or higher indicate that the hypothesized model fits the data adequately. The Root Mean Squared Error of Approximation (RMSEA) takes into account the degrees of freedom of the model relative to the discrepancy between the model and the observed data. A value of 0.05 or lower indicates a good fit of the data, values around 0.08 indicate a reasonable error of approximation, and values greater than 0.10 indicate that the model does not fit the data (Browne et al., 1992). Finally, the Standardized Root Mean Square Residuals (St RMR) is supposed to be lower than 0.10 and is preferably around 0.05 or lower if the model fits the data well.

Model 1: one single factor

The first model that was tested was a single factor model (model 1), assuming that all items load onto one single anxiety factor, without differentiating between different clusters of anxiety. This model would prevail over the other models if parents regard anxiety in their children as one phenomenon rather than as distinct clusters of symptoms. All items loaded significantly on the single factor, with loadings ranging from 0.20 to 0.74. Six items had a loading smaller than 0.30. Table 3.2 summarizes the findings with regard to the goodness of fit indices. Low factor loadings, the large χ^2 value, the low goodness of fit indices (NFI, NNFI, CFI), and the large RMSEA and standardized RMR lead to the conclusion that this model did not fit the data.

Table 3.2. Fit Indices for Five Hypothesised Models, with Comparisons Between Models

Model	χ^2	df	p	NFI	NNFI	CFI	RMSEA	Stand. RMR	Comparison	$\chi^2\,\Delta$	Df Δ	P of χ^2 change
Null model	37757	703										
Model 1: 1 factor	5728	666	<.001	0.84	0.84	0.85	0.100	0.096	Model 1 versus model 3	2472	16	<.001
Model 2: 6 uncorrelated factors	5021	665	<.001	0.85	0.85	0.80	0.095	0.22	Model 2 versus model 3	1765	5	<.001
Model 3: 6 correlated factors	3269	650	<.001	0.89	0.90	0.91	0.075	0.087	Null model versus model 3	34588	53	<.001
Model 4: 6 first-order factors, 1 second-order factor	Improper solution due to non positive definite PSI (Heywood case)											
Post-hoc-model: 5 factors with GAD as higher-order factor	3392	660	<.001	0.89	0.90	0.90	0.076	0.089	Model 5 versus model 3	Target coefficient = 0.96		

Model 2: six uncorrelated factors

The second model evaluated whether six uncorrelated factors describe the data best. The DSM-IV suggests a specific clustering of anxiety symptoms, and according to model 2 parents are thought to experience their child's anxiety also in distinct, unrelated clusters. All items loaded significantly on their hypothesized factor, with factor loadings ranging from 0.25 to 0.90. Three items had loadings lower than 0.40, namely item 7 'My child is

afraid when (s)he has to use public toilets', 21 'My child is scared of going to the doctor or dentist', and 34 'My child is afraid of being in small closed places, like tunnels or small rooms'. The goodness of fit indices (NFI, NNFI, CFI) were lower than 0.90, the χ^2 value was large, and the RMSEA exceeded the required 0.05 (see table 3.3), thus providing evidence that this model of six uncorrelated factor did not describe the data adequately.

Model 3: six correlated factors
This model took into account that the factors were likely to be intercorrelated given the reported co morbidity among anxiety disorders. The factor loadings of this model are displayed in table 3.2. The factor loadings ranged from 0.29 to 0.78. Five factor loadings were lower than 0.40, namely item 7 'My child is afraid when (s)he has to use public toilets', 16 'My child is scared of dogs', 21 'My child is scared of going to the doctor or dentist', 29 'My child is scared of insects or spiders' and 34 'My child is afraid of being in small closed places, like tunnels or small rooms'. The χ^2 value was large, but the goodness of fit indices showed a quite reasonable fit of the data, with the NFI, NNFI and CFI close to 0.90, the RMSEA lower than 0.08, and the standardized RMR lower than 0.10. Given that the χ^2 value is influenced by sample size, and that the other indices give support for the hypothesized model, it is concluded that this model provided a relative good fit for the data.

Model 4: six correlated factors and one higher order factor
In the process of testing the fourth model, an improper solution was found, due to a non-positive definite Psi value. This problem is also referred to as a Heywood case. It is often encountered when the factors of the model are highly intercorrelated. In this case, we found the main problem in the latent factor, that we described as generalized anxiety disorder. This factor had a correlation over 1.00 with the latent higher order factor. Hence, it was not possible to investigate this model any further without changing the content of items for each factor. Given the confirmatory approach in this study, no efforts were made to change the model.

Model 5: five correlated factors and generalized anxiety as one higher-order factor
A further plausible model was examined following the findings of model 4. In both child and adult literature, it has been suggested that generalized anxiety disorder may be viewed as the 'basic' anxiety disorder (Rapee, 1991). For instance, Spence (1997) found that most of the variance in generalized anxiety was explained by one higher-order factor of anxiety in general. This effect was even stronger in our model 4, with correlations outreaching the range of +1. Therefore, we hypothesized that the generalized anxiety disorder factor may in itself be the higher order factor. So, model 5 reflects a model of 5 separate anxiety factors, with one higher-order factor, being generalized anxiety disorder. The standardized loadings of the 5 factors on the generalized anxiety factor were high, being for 0.55 social anxiety, 0.78 for separation anxiety, 0.79 for panic / agoraphobia, 0.66 for physical injury fears, 0.77 for obsessive compulsive disorder. The percentages of unique variance accounted for by each of the first factor order factors were: 70% for social anxiety, 39% for separation anxiety, 38% for panic / agoraphobia, 56% for physical injury fears, 41% for obsessive compulsive

disorder. Table 3.2 shows the goodness of fit indices for model 5: satisfactory NFI, NNFI, and CFI, reasonable RMSEA and standardized RMR, and a large χ^2 value. Model 5 seems to describe the data adequately.

Comparing models 1-5

Table 3.2 summarizes the findings of testing the models. All χ^2 values were relatively high and indicated a deviation from the hypothesized models. Since χ^2 values are known to be influenced by sample size (e.g. Stevens, 1996), the goodness of fit indices were used to further evaluate the different models. Looking at the goodness of fit indices, models 3 and 5 provided the best fit for the data. It should be noted that a higher order model (such as model 5) can never provide a better fit than the first order model (model 3) from which it is formed, and merely examines the extent to which the covariation between factors can be adequately explained by the higher order structure. The fit of models 3 and 5 can be compared through the use of a target coefficient as described by Marsh and Hocevar (1985). The target coefficient is defined as the ratio of the χ^2 value of the first model to the χ^2 value of the more restricted second-order model. The target coefficient has an upper limit of 1, and a value higher than 0.90 is an indication that the covariance between the first order factors can satisfactorily be explained by the higher order factor. In our case, the target coefficient was 0.96. Therefore, it is concluded that model 5 describes the data most adequately.

Post-hoc Exploratory Factor Analysis

An exploratory factor analysis was conducted post-hoc in order to evaluate the percentage of explained variance by the six factors, as well as the factor loadings of the items on the six factors. The six factors respectively explained 22.1%, 8.3% 7.6%, 6.5%, 4.8%, and 4.1% of the variance, in total 53.4%. Corrected item correlations of the items on the a priori determined scales ranged from 0.14 to 0.72 (mean 0.49) and are displayed in table 3.3. The majority of items loaded strongly and significantly on their hypothesized factor.

Factorial Invariance

In order to show factorial invariance across different samples, several confirmatory analyses were conducted. Confirmatory factor analyses were performed with the computer program Simultaneous Components Analysis (SCA; Kiers, 1990). With confirmatory factor analysis the strength of recurrence of defined factors in a new population is assessed. The percentage of variance that can be explained by the a priori defined factors is compared to the percentage found by exploratory factor analyses (PCA), which is (by definition) the maximum amount of variance that the data can explain. Little difference between these percentages indicates a good fit of the data to the proposed number of factors. Next, Tucker's phi coefficients were computed for each factor. Phi values of .85 or higher provide confirmatory evidence for the hypothesized factor in the present sample. For further details of the procedure the reader is referred to (ten Berge, 1986). Six intercorrelated factors (1 / 0.3 matrix) were presumed in the confirmatory factor analyses.

Table 3.3. Confirmatory Factor Analysis: Factor Loadings (Completely Standardised) for Six Correlated Factors

Original scale	SCAS items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
SAD	(5) My child would feel afraid of being on his/her own at home	.68					
SAD	(8) My child worries about being away from us/me	.83					
SAD	(11) My child worries that something awful will happen to someone in our family	.64					
SAD	(14) My child is scared if (s)he has to sleep on his/her own	.66					
SAD	(38) My child would feel scared if (s)he had to stay away from home overnight	.43					
SAD	(15) My child has trouble going to school in the mornings because (s)he feels nervous or afraid	.70					
SoPh	(6) My child is scared when (s)he has to take a test		.62				
SoPh	(7) My child is afraid when (s)he has to use public toilets		.29				
SoPh	(9) My child feels afraid that (s)he will make a fool of him/herself in front of people		.78				
SoPh	(10) My child worries that he/she will do badly at school		.76				
SoPh	(26) My child worries what other people think of him/her		.76				
SoPh	(31) My child feels afraid when (s)he has to talk in front of the class		.63				
GAD	(1) My child worries about things			.71			
GAD	(3) When my child has a problem, (s)he complains of having a funny feeling in his/her stomach			.57			
GAD	(4) My child complains of feeling afraid			.73			
GAD	(18) When my child has a problem, s(he) complains of his/her heart beating really fast			.57			
GAD	(20) My child worries that something bad will happen to him/her			.76			
GAD	(22) When my child has a problem, (s)he feels shaky			.53			
Panic / Ag	(12) My child complains of suddenly feeling as if (s)he can't breathe when there is no reason for this				.69		
Panic / Ag	(19) My child suddenly starts to tremble or shake when there is no reason for this				.65		
Panic / Ag	(25) My child feels scared if (s)he has to travel in the car, or on a bus or train				.46		
Panic / Ag	(27) My child is afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)				.47		
Panic / Ag	(28) All of a sudden my child feels really scared for no reason at all				.75		
Panic / Ag	(30) My child complains of suddenly becoming dizzy or faint when there is no reason for this				.56		
Panic / Ag	(32) My child complains of his/her heart suddenly starting to beat too quickly for no reason				.67		
Panic / Ag	(33) My child worries that (s)he will suddenly get a scared feeling when there is nothing to be afraid of				.69		
Panic / Ag	(34) My child is afraid of being in small closed places, like tunnels or small rooms				.29		
OCD	(13) My child has to keep checking that (s)he has done things right (like the switch is off, or the door is locked)					.48	
OCD	(17) My child can't seem to get bad or silly thoughts out of his/her head					.77	
OCD	(24) My child has to think special thoughts (like numbers or words) to stop bad things from happening					.56	
OCD	(35) My child has to do some things over and over again (like washing his/her hands, cleaning or putting things in a certain order)					.49	

Original scale	SCAS items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Ph Inj	(2) My child is scared of the dark						.72
Ph Inj	(16) My child is scared of dogs						.36
Ph Inj	(21) My child is scared of going to the doctor or dentist						.31
Ph Inj	(23) My child is scared of heights (e.g. Being at the top of a cliff)						.37
Ph Inj	(29) My child is scared of insects or spiders						.37

Note 'SAD'=separation anxiety disorder, 'SoPh' social phobia, 'GAD' generalised anxiety disorder, 'Panic / Ag' panic / agoraphobia, 'OCD' obsessive compulsive disorder, 'Ph Inj' Physical injury fears

Factorial invariance of the SCAS-P

Results of the confirmatory factor analysis revealed that 51.4% variance was explained by the 6 hypothesized, correlated factors. This is 3.9% less variance than could be explained through PCA (53.4%), indicating the maximum percentage of explained variance by six factors. Examination of the separate components revealed the following phi coefficients for the six correlated factors: separation anxiety 0.90, social phobia 0.95, generalized anxiety 0.90, panic / agoraphobia 0.93, obsessive-compulsive disorder 0.96, and physical injury fears 0.94. The mean phi for all scales was 0.93, suggesting that these data are well described by the six intercorrelated factors that were specified a priori.

Factorial invariance with regard to clinical group, age, gender, and country

To evaluate whether the factor structure of six correlated factors was invariant across different samples, various confirmatory factor analyses were conducted. In the anxiety disordered group (n=462) and the normal control group (n=261), the difference in % of explained variance was satisfactory (53.3% in PCA, 48.9% in SCA, and 55.6% in PCA, 51.8% in SCA respectively). All phi coefficients of the subscales were well above 0.80 (mean of 0.92 in the anxious group, and 0.91 in the normal control group). In the Dutch group (n=199) the percentage of explained variance was 56.4% through PCA and 51.2% through SCA, and the mean of phi coefficients for the subscales was 0.92. In the Australian group (n=524), 55.6% explained variance was obtained through PCA, versus 51.8% through SCA. The mean of phi coefficients was 0.93 for the subscales. With regard to gender, in the male sample (n=376) 54.9% of variance was explained through PCA and 50.4% through SCA. The mean phi coefficient was 0.93. In girls (n=347), 57.4% of variance was explained through PCA and 53.6% through SCA. The mean phi coefficient was 0.93. Finally, two age groups were formed, one from 6-11 years and the other from 12-18 years. In the younger group (n=454), PCA explained 52.7% of the variance through PCA and 48.7% through SCA. The mean phi coefficient was 0.93. In the older group (n=269), 47.9% of explained variance was obtained through PCA and 42.6% through SCA, and a mean phi coefficient of 0.91 was found for the subscales. In all, there was an absolute difference of percentage of explained variance of 4-5% between the maximum possible percentage (through PCA) and the hypothesized division of items in correlated factors (SCA). All phi values were well above 0.85. These results indicate that the factors of the SCAS-P are sufficiently invariant across age, gender, and the two countries studied.

Reliability

Cronbach's alpha coefficients were calculated for each subscale of the SCAS-P. Since alphas are largely dependent on scale length, corrected reliability coefficients were computed by the Spearman Brown formula. The internal consistency for the subscales in the two different samples was satisfactory to excellent for most subscales (Nunnally, 1978). In the anxiety disordered group, the results were the following (Cronbach's alpha with corrected Spearman Brown coefficients in parentheses): separation anxiety 0.76 (0.91), social phobia 0.77 (0.92), generalized anxiety 0.75 (0.91), panic / agoraphobia 0.81 (0.92), obsessive-compulsive disorder 0.78 (0.92), and physical injury fears 0.61 (0.83). In the normal control group, these figures were: separation anxiety 0.74 (0.90), social phobia 0.74 (0.90), generalized anxiety 0.67 (0.85), panic / agoraphobia 0.61 (0.80), obsessive-compulsive disorder 0.74 (0.90), and physical injury fears 0.58 (0.81). The alpha for the total scale was equally high in both groups (0.89), which indicates high internal homogeneity.

Intercorrelations of SCAS-P subscales

Table 3.4 displays the intercorrelations of SCAS-P subscales. In the anxious group, correlations varied from .19 to .66, with a mean of .35. The highest correlations were found between generalized anxiety, panic / agoraphobia, and separation anxiety. In the control group subscale intercorrelations were higher, varying from .33 to . 57 (mean .44).

Table 3.4. Intercorrelations of SCAS-P Subscales for Anxious Group (N=484) and Control Group (N=261; in Parentheses)

	Separation Anxiety	Generalized Anxiety	Social Phobia	Panic/ Agoraphobia	Physical Injury Fears	OCD	Total
Separation Anxiety	1						
Generalized Anxiety	.60 (.55)	1					
Social Phobia	.19 (.45)	.33 (.57)	1				
Panic / agoraphobia	.42 (.38)	.66 (.53)	.20 (.37)	1			
Physical Injury Fears	.38 (.51)	.34 (.33)	.29 (.36)	.25 (.31)	1		
OCD	.35 (.44)	.48 (.51)	.19 (.35)	.36 (.51)	.20 (.31)	1	
Total	.72 (.80)	.84 (.79)	.55 (.75)	.72 (.66)	.59 (.66)	.61 (.68)	1

Note: All intercorrelations were significant at $p < .001$

Convergent and Divergent Validity

To determine convergent and divergent validity of the SCAS-P, the total score was correlated with other parent and child reports. The SCAS-P total scale correlated strongly and significantly with the CBCL-internalizing subscale (0.55 in the anxiety disordered group, 0.59 in the normal control group) and significantly, but at a lower level, with the CBCL-externalising subscale (0.33 in the anxiety disordered group, 0.34 in the normal control group). As predicted, the correlation with the CBCL-internalizing subscale was significantly higher than the correlation with the CBCL-externalising subscale in both groups (anxious group: $Z=387.7$, $p<.001$; control group: $Z=49.8$, $p<.001$; Meng et al., 1992), thus providing evidence for convergent and divergent validity respectively.

In terms of convergence between parent and child self-report on the separate SCAS subscales, intercorrelations ranged from .41 to .66 in the anxiety-disordered group, and

Table 3.5. Correlations Between SCAS-C and SCAS-P for the Anxious Group (N=467) and Normal Controls (N=260; In Parentheses).

Child Parent	Separation Anxiety		Generalized Anxiety		Social Phobia		Panic/ Agoraphobia		Physical Injury Fears		OCD		Total	
Separation Anxiety	.66**	(.60**)	.26**	(.29**)	.07	(.26**)	.24**	(.25**)	.28**	(.08)	.18**	(.30**)	.38**	(.43**)
Generalized Anxiety	.42**	(.29**)	.47**	(.28**)	.21**	(.27**)	.38**	(.25**)	.26**	(-.13*)	.26**	(.26**)	.46**	(.33**)
Social Phobia	.06	(.30**)	.16**	(.31**)	.41**	(.55**)	.13**	(.28**)	.21**	(.09)	.11*	(.29**)	.23**	(.44**)
Panic / agoraphobia	.27**	(.21**)	.40**	(.23**)	.22**	(.20**)	.48**	(.33**)	.20**	(.01)	.20**	(.24**)	.41**	(.29**)
Physical Injury Fears	.29**	(.33**)	.16*	(.19**)	.18**	(.24**)	.10*	(.18**)	.55**	(.23**)	.09	(.11*)	.27**	(.36**)
OCD	.27**	(.22**)	.29**	(.21**)	.11*	(.14*)	.20**	(.13*)	.13*	(-.04)	.50**	(.27**)	.34**	(.24**)
Total	.49**	(.47**)	.42**	(.36**)	.30**	(.40**)	.38**	(.33**)	.39**	(.07)	.33**	(.34**)	.51**	(.49**)

Note. ** significant p<.001, * significant p<.01, one-tailed

from .23 to .60 in the control group (see also table 3.5). Parent child agreement was highest for the subscales that consisted of items with observable behaviour (e.g. separation anxiety). Also, as expected, higher concordance was found between corresponding subscales than between non-corresponding subscales.

Discriminant Validity

Discrimination between anxiety disordered children and normal controls.

In order to establish discriminant validity we predicted that parents of normal controls would report significantly less symptoms on all subscales of the SCAS-P than parents of anxiety disordered children. Due to non-normality in the data, nonparametric Mann Whitney U tests rather than ANOVAs were conducted in order to evaluate between group differences. Table 3.6 shows the means and standard deviations of all subscale scores in both groups. Results showed that the anxiety-disordered group had significantly higher scores on all subscales than the normal control group.

Table 3.6. Means and Standard Deviations of SCAS-P Subscales and Between Group Differences

SCAS-P Subscale	Anxiety disordered (n=484)	Normal controls (n=261)	Mann Whitney U tests (z-values)
Separation Anxiety	6.9 (4.1)	2.6 (2.8)	-13.7**
Generalized Anxiety	6.6 (3.1)	2.7 (2.0)	-16.0**
Social Phobia	7.7 (3.8)	4.2 (2.8)	-11.9**
Panic / agoraphobia	3.6 (3.9)	1.0 (1.6)	-12.6**
Physical Injury Fears	4.1 (2.8)	2.6 (2.3)	-7.8**
OCD	3.0 (3.1)	1.1 (1.7)	-10.9**
Total	31.8 (14.1)	14.2 (9.7)	-16.1**

** p< .001

A discriminant analysis was performed to check whether scores on the SCAS-P can reliably predict children's diagnostic status with respect to anxiety disorders. In discriminant analysis, a high percentage of correctly classified children indicates a good ability to differentiate between groups. The analysis revealed one highly significant function (Wilks

Lambda .65, p< .001). The correlations between the discriminating variables and the discriminant function were generally high (generalized anxiety 0.90; social phobia 0.66; separation anxiety 0.75; panic / agoraphobia 0.53; obsessive-compulsive disorder 0.47; and physical injury fears 0.39). The standardized canonical discriminant function coefficients revealed that the classification was mostly determined by SCAS-P generalized anxiety scores (0.62), followed by social phobia (0.37), and separation anxiety (0.35) scores, and not at all by scores on panic (-0.07), OCD (0.01), or physical injury fears (-0.07). Overall, 80.5 % of the children were correctly classified (86% of the anxiety disordered and 71% of the normal controls).

Discrimination between the different anxiety disorders.
Another issue in discriminant analyses is the differentiation between anxiety disorders. We expected the groups of children with primary diagnoses of separation anxiety disorder, social phobia, generalized anxiety disorder, panic / agoraphobia, and obsessive compulsive disorder (according to the ADIS C/P) to show elevated levels of reported anxiety on the matching subscales on the SCAS-P, as well as lower levels of reported anxiety on the non-matching subscales. Table 3.7 shows that children with primary separation anxiety disorder had indeed higher scores on the separation anxiety subscale. Similarly, children with social phobia and OCD had the highest scores on the corresponding subscales of the SCAS-P. The subscales of GAD and Panic / Agoraphobia, however, were less specific and children with other diagnoses also had high scores on these subscales.

Table 3.7. Means And Standard Deviations of SCAS-P Subscales by Primary Anxiety Disorder Diagnostic Group

Primary Diagnosis SCAS-P Subscale	Separation Anxiety (n=95)	Generalized Anxiety (n=164)	Social Phobia (n=137)	Panic/ Agoraphobia (n=19)	Specific Phobia (n=49)	OCD (n=18)
Separation Anxiety	10.5 (3.2)	6.2 (3.6)	5.0 (3.6)	8.0 (5.2)	7.1 (3.8)	6.1 (4.1)
Generalized Anxiety	7.5 (2.9)	6.6 (3.2)	5.6 (2.8)	9.4 (4.3)	6.7 (2.9)	6.1 (3.1)
Social Phobia	6.6 (3.6)	7.9 (3.7)	9.1 (3.4)	6.5 (3.9)	5.7 (3.4)	6.9 (4.3)
Panic / agoraphobia	3.9 (3.3)	3.1 (3.6)	2.9 (3.1)	11.2 (7.1)	3.6 (3.1)	3.3 (3.2)
Physical Injury Fears	4.7 (3.2)	4.0 (2.4)	3.8 (2.7)	3.3 (2.9)	5.4 (3.0)	3.1 (2.6)
OCD	3.2 (2.7)	3.0 (2.9)	2.1 (2.1)	3.7 (4.8)	2.7 (2.5)	9.1 (4.5)
Total SCAS-P	36.5 (13.3)	30.8 (13.5)	28.4 (13.0)	42.1 (22.6)	31.2 (12.8)	34.7 (13.2)

To further examine the ability of the SCAS-P to classify children into the group of their original primary diagnosis according to the ADIS C/P, a discriminant analysis was conducted within the anxiety-disordered group. Children with a specific phobia were excluded, since no SCAS-P subscale refers primarily to that classification. Discriminant analysis revealed 4 significant canonical functions, with the following Wilks Lambda's: 0.37 (p<0.001), 0.58 (p<0.001), 0.77 (p<0.001), and 0.98 (p<.05). The correlations between the four functions and the discriminating variables are displayed in table 3.8, whereas the standardized canonical discriminant function coefficients are summarized in table 3.9. The SCAS-P correctly classified 51.7% of children in total, being quite accurate in classifying separation anxiety (70%), social phobia (60%), panic / agoraphobia (68%) and obsessive compulsive disorder (72%). However, the SCAS-P had more difficulty in discriminating

Table 3.8. Correlations Between Discriminant Functions and Discriminating Variables

	Function 1	Function 2	Function 3	Function 4
Separation anxiety	.76*	-.05	-.04	.26
Social Phobia	-.33*	-.11	-.13	.29
Physical injury fears	.17*	-.09	-.16	-.01
OCD	.16	.78	.25	-.04
Panic / Agoraphobia	.22	-.15	.81*	.12
Generalised anxiety	.33	-.07	.31	-.43

* indicates largest absolute correlation between each variable and any discriminant function

Table 3.9. Standardised Canonical Discriminant Function Coefficients

	Function 1	Function 2	Function 3	Function 4
Separation anxiety	.99	-.08	-.38	.66
Generalised anxiety	.10	-.35	-.08	-1.43
Physical injury fears	.05	-.07	-.24	-.12
OCD	-.04	1.16	.13	.09
Panic / Agoraphobia	-.09	-.27	1.12	.60
Social Phobia	-.70	-.17	-.25	.49

children with generalized anxiety disorder: only 31% of children who were diagnosed with generalized anxiety disorder were correctly classified, whereas 20% of them were classified as socially phobic, and 14% as separation anxious.

Age and Gender Effects on SCAS-P

Pearson correlations were carried out to determine the effect of the child's age on SCAS-P subscales. We expected negative correlations between age and separation anxiety, and positive correlations between age and social phobia and panic / agoraphobia. Subsequently, children were divided in a younger (6-11 years) or older (12-17 years) age group, and MANOVAs (gender, age group) were performed to evaluate age or gender effects. This analysis allowed for the evaluation of interaction effects between age and gender. All analyses were carried out on the total sample (n=745). The total score of the SCAS-P had a significant negative correlation with age ($r=-.16$, $p<.001$). Focusing on the distinct subscales, significant correlations were found between age and generalized anxiety ($r=-12$, $p<.001$), panic / agoraphobia (.10, $p<.001$), separation anxiety (-.32, $p<.001$) and physical injury fears (-.26, $p<.001$). The other subscales revealed no effect of age. MANOVA including all subscales revealed a multivariate effect of age group ($F(1,743) = 17.3$, $p < .001$), no multivariate effect of gender ($F(1,721)=1.45$, $p < .18$), and no interaction effect between age and gender ($F(1,743)=1.50$ $p < .16$).

Univariate results for age group showed significant effects for separation anxiety ($F(1,743) = 52.9$, $p<.001$; younger children had higher scores), generalized anxiety ($F(1,743) = 7.98$, $p<.001$; younger children had higher scores), panic / agoraphobia ($F(1,743) = 5.35$, $p<.02$; younger children had lower scores), and physical injury fears ($F(1,743) = 25.6$, $p<.001$; younger children had higher scores). Table 3.10 shows the mean values and standard deviations by age group and gender for subscales and total scores, for clinical and community samples separately.

Table 3.10. Means and Standard Deviations of SCAS-P Subscales in Normals and Anxiety Disordered Children, Separate for Gender and Agegroups

		Anxiety disordered children		Normal control children	
		6-11 years	12-18 years	6-11 years	12-18 years
Separation anxiety,					
6 items	Boys	7.2 (4.0)	5.8 (4.0)	3.4 (3.5)	1.8 (2.1)
	Girls	7.8 (4.0)	5.4 (4.1)	3.7 (2.9)	1.8 (2.1)
Social phobia,					
6 items	Boys	7.3 (3.6)	7.5 (3.9)	4.3 (3.0)	3.4 (2.1)
	Girls	7.7 (4.0)	8.5 (3.6)	4.8 (3.2)	4.1 (2.7)
Generalised anxiety,					
6 items	Boys	6.5 (2.9)	6.6 (3.3)	2.9 (2.1)	2.5 (2.2)
	Girls	6.7 (3.3)	6.6 (3.4)	3.1 (1.9)	2.4 (2.0)
Panic / agoraphobia,					
9 items	Boys	2.9 (2.9)	4.4 (4.6)	1.0 (1.6)	0.9 (1.6)
	Girls	3.3 (3.4)	4.9 (5.4)	0.9 (1.2)	1.2 (2.1)
Physical injury fears,					
5 items	Boys	4.4 (2.8)	3.0 (2.5)	3.2 (2.8)	2.1 (2.1)
	Girls	4.5 (2.9)	3.9 (2.6)	2.7 (1.8)	2.4 (2.2)
Obsessive compulsive disorder,					
6 items	Boys	3.1 (2.9)	3.0 (3.0)	1.2 (1.7)	1.1 (2.0)
	Girls	3.1 (3.0)	2.8 (3.5)	1.1 (1.8)	0.8 (1.5)
Total,					
38 items	Boys	31.4 (12.9)	30.1 (14.9)	16.0 (11.6)	11.8 (8.3)
	Girls	33.0 (13.5)	32.2 (16.7)	15.9 (9.0)	12.6 (9.1)

Discussion

This paper presents the psychometric properties of the SCAS-P, a parent completed measure derived from the SCAS, a child questionnaire designed to assess children's symptoms of anxiety along the structure of the DSM-IV. Based on 484 anxiety disordered children and 264 normal controls, the results suggest that the SCAS-P shows generally good psychometric properties and that it seems highly useful for both research and clinical purposes, especially when combined with the child version.

Factor structure

The first goal of this study was to determine whether the factor structure of the parent measure was consistent with the child version, reflecting the specific anxiety disorder subtypes outlined by DSM-IV. Confirmatory factor analysis suggested that the structure of the parent scale could be explained satisfactorily by six intercorrelated factors that showed considerable concordance with subscales predicted from the DSM-IV anxiety disorders. Next, we examined whether a higher-order factor could explain the intercorrelations between the six factors. Due to the strong intercorrelations between the factors and the higher-order factor, this model could not be analysed satisfactorily. The intercorrelation was especially strong between the generalized anxiety disorder factor and the higher-order factor. In fact, this finding is not new. In both the child and adult literature, it is suggested that generalized anxiety disorder may be viewed as the 'basic' anxiety disorder, and not as a separate anxiety disorder. This may be due to the considerable amount of overlap between

anxiety disorders, especially with regard to worry (Weems et al., 2000). Indeed, quite a few items of the SCAS-P in the non-GAD-factors are formulated in terms of worry (e.g. item 11 'My child worries that something awful will happen to someone in our family' (separation anxiety) or item 26 'My child worries what other people think of him/her' (social phobia). In the development of a parent measure for preschool children, Spence, Rapee, McDonald, and Ingram (2001) also found little support for a separate GAD-factor, and suggested that these GAD-items may reflect a relatively pure, high trait anxiety. Similarly, Spence (1997) found little support for a GAD-factor in the development of the child version of the SCAS. In fact, most of the variance in generalized anxiety was explained by one higher-order factor of anxiety in general. This effect was even stronger in our model 4, with correlations outreaching the range of +1. Therefore, we hypothesized that the generalized anxiety disorder factor may in itself be the higher order factor. This model of 5 factors and one generalized anxiety disorder as a higher-order factor fitted the data relatively well. As such, the generalized anxiety disorder factor satisfactorily explained the covariation between the other 5 factors. The high degree of inter-correlation between factors found in the present study is consistent with previous research involving child self report of anxiety (e.g. Spence, 1997) and also in a parent measure of anxiety for preschool children (Spence et al., 2001). Further research is warranted to examine the validity of GAD as a separate anxiety disorder as distinct from an underlying trait of anxiety in general.

Reliability

Internal reliabilities of the subscales were satisfactory in both the clinical and the normal control group. Reliability coefficients that were corrected for scale length ranged from .81 to .90 in the normal group and from .83 to .92 in the clinical group, thus providing evidence for internal consistency of the subscales, supporting their use not only for research purposes, but also for clinical practice (Nunnally, 1978). The SCAS-P also showed good convergent validity, both with another parent measure (CBCL-internalizing) and with the child measure of anxiety symptoms (SCAS). Moreover, the subscales of the parent measure correlated highly with the corresponding subscales of the child measure. In fact, parent child agreement was higher (0.51 for total score; 0.51 mean of all subscales in the anxiety disordered group; respectively 0.49 and 0.38 in the normal control group) than in most studies that have examined parent-child agreement of emotional and behavioural problems (0.25 for internalizing problems of the CBCL and 0.32 for the total score of the SCARED (Birmaher et al., 1997)). Interestingly, but not surprisingly, informant agreement was somewhat lower in the subscales referring to internal processes (such as GAD and OCD) than it was for more observable behavioural symptoms such as separation anxiety and physical injury fears. Children, and especially older children, may not so much share all their thoughts and feelings with their parents. In this study, parent child agreement was higher in the anxiety-disordered group than the normal control group.

Discriminant validity between anxiety disordered and community children

The study also investigated whether the SCAS-P could differentiate between normal controls and anxiety disordered children. Significant differences were evident between

groups for the mean scores on all subscales. Discriminant analyses then showed that a high percentage of children was classified correctly based on SCAS-P subscales. It is important to note that some of the errors in classification may reflect the presence of anxiety disorders in the normal control group. It is natural to find some clinically anxious children in the normal control group, since prevalence rates in the normal population are presumed to be at least 4% (based on both parent and child interview (Kashani et al., 1990)). On the other hand, we also found some parents of the anxiety-disordered children who presented their child's symptoms within the normal range. Post-hoc analyses showed that 37% of the clinically diagnosed children had parent ratings within the normal range (defined as below the mean + 1 standard deviation cut-off, using the national normal data of this paper). One explanation may lie in the fact that the SCAS-P is a symptoms-oriented questionnaire. Higher scores are found when one reports many anxiety symptoms while reports of few anxiety symptoms lead to a low score. However, having fewer symptoms does not necessarily mean that the individual has a less severe disorder. Some children who are referred for treatment only have one specific but highly interfering problem. In this respect, it is recommended to not only look at total scores, but also at subscales and individual items on which parents indicate a 3 ('always afraid'). In order to obtain a reliable and valid clinical diagnosis and detailed case formulation, a questionnaire of this type is designed to be used in conjunction with parent and child interviews, rather than in isolation.

Discriminant validity between the different anxiety disorders

In terms of discriminant validity between the different anxiety disorders, 80.5% of the children were correctly classified (86% of the anxiety disordered and 71% of the normal controls) as having a clinical diagnosis of an anxiety disorder or not. The accuracy of classification was lower for specific anxiety disorder diagnoses, with 51.7% of the children being classified correctly based on their SCAS-P subscale-scores. For children with primary separation anxiety, social phobia, panic / agoraphobia, and OCD this percentage was 60 to 72%, which is very high, considering the amount of comorbidity and overlap in symptoms between the anxiety disorders. For GAD only 31% of the children were correctly classified, with the remainder being equally categorized as separation anxiety disorder or social phobia. Further research is needed to determine whether the problems in correctly classifying GAD can be attributed to the content of the SCAS-P items or to the validity of the concept of GAD as a clinical diagnosis in children and adolescents.

Effects of age and gender

The final goal of the study was to examine the effects of the child's gender and age in relation to their parent's score on the subscales or the total scale. We found no effect for gender on any of the subscales. This finding contrasts with research indicating that child self-reports of anxiety are influenced by gender, with girls typically indicating higher levels of anxiety (e.g. Spence, 1997; Birmaher et al., 1997; Muris et al., 2000a). Similarly, prevalence rates of anxiety disorders are generally higher in females than in males (e.g. Weiss & Last, 2001). Studies regarding parent reports of their child's anxiety symptoms have produced conflicting results. Bouldin and Pratt (1998) and Birmaher and collaegues (1997) found

significant gender effects on parent measures of childhood anxiety, whereas the group of Spence (2001) found no gender differences in parent reported anxiety among preschoolers. Further studies should explore these apparently conflicting results in greater depth.
In contrast to the lack of gender effects, some age effects were noted. As expected, separation fears decreased with age, while agoraphobic fears increased with age (Halpern, Ellis, & Simon, 1990; King, Gullone, Tonge, & Ollendick, 1993). In addition, parents reported more symptoms of physical injury fears and generalized anxiety in younger children than in older children. The last finding is a little surprising: one would expect worry symptoms of generalized anxiety to be higher for adolescents than for younger children. This can be due to the contents of the items, with relatively much focus on the physical symptoms. Younger children are known to experience anxiety more physically. Another explanation could be that adolescents may less share their thoughts and feelings with their parents, and parents may be less aware of the frequency of worry in older children than in younger children. Perhaps surprisingly, social fears did not change with age but this finding is consistent with some other research that has reported consistency in social/evaluative concerns across age (Campbell & Rapee, 1994).

Limitations

Limitations to this study include some methodological issues. First, the data were not identical with regard to the informant. In the Dutch group and most of the Australian normal controls, parents filled out the questionnaires together. In the Australian anxiety disordered group, fathers and mothers each filled out the questionnaires separately. We decided to take the mean scores of father and mother if they filled out the questionnaires apart. The main reason for this was the high intercorrelation between mother and father reports. Future research could examine whether different procedures lead to different outcomes, and if so, which procedure yields the most reliable and valid answers: the report of the primary caregiver (mostly the mother), the mean of the reports of both parents separately, or the judgment from both parents together after discussion. The issue of parent bias in reporting on anxiety symptoms in children also needs to be addressed. Research has shown that the anxiety or depression level of parents can influence their judgment of the level of their child's anxiety (e.g. Najman et al., 2001).

Future research

Suggestions for future research include further examination of discriminant validity. Even though the SCAS-P appears to differentiate clearly between clinically anxious children and normal controls, it remains to be determined whether the SCAS-P can differentiate children with anxiety disorders from those with other forms of psychopathology, such as depression or ADHD. Child self-reports on general anxiety (STAIC, RCMAS, FSS) have been found to discriminate well between normals and anxiety disordered children, but not between anxious children and children with other emotional and behavioural problems (Perrin & Last, 1992). Research findings were inconclusive for a more specific measure of anxiety symptoms, the MASC. In a brief journal letter, Manassis, Tannock, Mendlowitz, Laslo, and Masellis (1997) found the MASC to show no difference between anxiety disordered children

and children with ADHD, whereas March (1997) was more optimistic in his reply. From a clinical perspective it is also important to examine the extent to which the SCAS-P is sensitive to change following treatment. Some data from our clinics have shown that the SCAS-P can reflect improvements following successful treatment for child anxiety (Abbott, Gaston, & Rapee, 2002; Nauta, Scholing, Emmelkamp, & Minderaa, 2003).

Conclusions

In summary, the SCAS-P represents a relatively reliable and valid instrument for the assessment of anxiety among children and adolescents, especially when combined with the child version of the SCAS. In research, this new instrument can provide us with information on how the parents perceive anxiety symptoms in their child in terms of the clusters that are provided by the DSM-IV. In clinical practice, parents can be asked to fill out the questionnaire at home and take it to the intake evaluation. In this way, children can be screened for anxiety disorders in a cost-effective way. Reported anxiety symptoms by the parents may give the clinician cause to further evaluate a possible anxiety disorder in their child, for instance through a semi-structured interview. Finally, both the child and parent versions may give important information for treatment and may be used to evaluate the effects of interventions.

Chapter 4

Cognitive-behavioural therapy for anxiety disordered children in a clinical setting: Does additional cognitive parent training enhance treatment effectiveness?

Nauta, M.H., Scholing, A., Emmelkamp, P.M.G., & Minderaa, R.B. (2001)
Clinical Psychology and Psychotherapy, 8, 330-340

Abstract

The effectiveness of a treatment protocol with individual CBT for children with anxiety disorders was evaluated in a clinical setting, i.e. an outpatient clinic for child and adolescent psychiatry. In addition, the surplus value of a cognitive parent-training program above the individual CBT was determined.
Eighteen children with anxiety disorders were treated at an outpatient clinic for child and adolescent psychiatry. All children received 12 weekly sessions of individual cognitive behaviour therapy and all parents had 2 sessions in which the treatment method was explained. In addition, the families were randomly assigned to one of the following conditions: 1) no extra treatment, or 2) additional cognitive training for the parents, consisting of 7 two-weekly sessions, parallel to the individual treatment of the child. Results were studied at post-treatment, at 3-months follow-up, and at 15 months follow-up. Both child and parent reports showed significant decline of anxiety of the child, reaching the level of normal controls at 3 months follow-up. According to parent reports, many children improved between the post-test and the 3 months follow-up. Additional cognitive parent training did not add to the results of individual cognitive behaviour therapy for the children. At 15 months follow-up, data for the total group revealed a general increase in anxiety symptoms in child reports but not in parental reports. Five children showed severe psychopathology, whereas the other 12 children reported no anxiety disorders and high levels of general functioning. Again, no differences between the treatments were found.

Introduction

It has only been for a decade that protocollised treatment manuals are available for treating anxiety disorders in children with cognitive-behavioural therapy. During this period, a growing body of literature has emerged on treatment of anxiety disorders in children, including a number of controlled trials (Kendall, 1994; Barrett, Dadds & Rapee, 1996; Cobham, Dadds & Spence, 1998; Mendlovitz, Manassis, Bradley, Scapillato, Miezitis & Shaw, 1999; Barrett, Duffy, Marks & Rapee, 2001). Overall, the results were positive: at post-treatment as well as at follow-up a majority of children did not meet DSM-IV criteria for an anxiety disorder, and both children and parents reported fewer anxiety symptoms in the child.

Treatment effectivity in research settings and in clinical practice

The generalisability of these research findings to the clinical practice is a frequently raised issue (e.g. Silverman, Kurtines, Ginsburg, Weems, Lumpkin & Carmichael, 1999). Or, as Ronan and Dean (1998) noted: can these 'lab-based' treatments be transported into 'real-world' clinical settings? Earlier findings regarding psychotherapy with children and adolescents (reviewed by Weisz, Weiss & Donenberg, 1992; Weisz, Donenberg, Han & Weiss, 1995) indicated that clinic therapy studies show markedly poorer outcomes than research therapy studies. Meta-analyses over multiple controlled trials (for a review, see Weisz, 1998) showed moderate to high effect sizes in lab studies (about 0.80), but dramatically low effect sizes in clinic based outcome studies (ranging from -0.4 to 0.29 with a mean of 0.01). It must be noted that only nine clinic based studies were reported between 1942 and 1993. The reasons for the disparity in effect sizes are not clear yet. One important difference between research and clinic based studies can be found in the type of treatments used: mainly behavioural treatments in the research studies, mainly nonbehavioural in the clinical studies; while earlier meta-analyses showed that behavioural treatments were about twice as successful as nonbehavioural treatment (Weisz et al., 1987; Weisz et al., 1995). Another explanation may be found in major differences between the populations treated. Children included in laboratory studies are often non-referred, and the research design may enforce exclusion criteria like comorbid disorders, that may be rule rather than exception in clinical populations. Weisz (1998) stressed the need for bridging this gap between laboratory and clinic outcome studies in order to enhance treatment effectiveness in clinical practice itself.

Cognitive behavioural therapy for children with anxiety disorders and their parents

Treatments that proved effective for anxiety disordered children include cognitive-behavioural techniques incorporated in a protocollised treatment manual. Kendall (1994) was the first to introduce such a manual for children with anxiety disorders, called 'Coping

Cat' (Kendall, Kane, Howard & Siqueland, 1990). The outcome study showed promising results, both at post-treatment and at follow-up (Kendall, 1994). Barrett, Dadds and Rapee (1996) pursued this line of research. They did not only adapt the treatment manual into a shorter version, but also composed a family intervention program. Their results indicated comparable favourable outcome for CBT on anxiety-disordered children. Moreover, they found a slight surplus value for the additional parent training, especially at the follow-up and more pronounced for girls and younger children. Mendlovitz, Manassis, Bradley, Scapillato, Miezitis & Shaw (1999) developed a group-based treatment, and found group-based CBT effective in reducing anxiety symptoms. Additionally, they observed that parental involvement modestly enhanced active coping strategies, equally suggesting favourable outcome for directly involving both parents and children. In short, both individual and group-based CBT seem to have beneficial effects on anxiety disordered children. The surplus value of parent training so far is modest and may, although statistically significant, not be clinically relevant. This surplus value of parent training programs may be increased by refining the content of the program, adding treatment ingredients from cognitive therapy that were found to be effective in adults.
It is noted that parents' beliefs and attitudes may impede treatment progress (Siqueland & Diamond, 1998). However, most programs do not pay attention to parental thoughts and feelings. Instead, they teach parents operant principles (for example, consistent praise of approach and coping behaviour and ignorance of problem behaviour of their child), disregarding the parental thoughts and feelings that may provoke their current behaviour or hinder them to perform recommended new behaviour. Recent research in the field of outcome studies on adult psychopathology showed beneficiary effects of adding cognitive interventions to strictly behavioural techniques. Cognitive interventions seem to strengthen the process of changing current behaviour to adaptive behaviour and are thought to have a positive effect on the maintenance of treatment gains.

Aims for the current study

In the current study, the effectiveness of a 12-session version of the Coping Cat treatment manual was investigated in the clinical practice of an outpatient clinic for child and adolescent psychiatry. Further, it was evaluated whether a short cognitive parent-training program enhanced the effectiveness of the individual CBT for children.

Method

Subjects

18 children, aged 8-15 years (M= 10.2; 10 boys, 8 girls), with an anxiety disorder participated in this study. They were referred to an outpatient psychiatric clinic for children with mental problems. Children were included in the study when they met the DSM-IV criteria for an anxiety disorder (as their main problem), based on the Anxiety Disorders Interview Schedule for Children (ADIS-C; Silverman & Nelles, 1988). Exclusion criteria included psychotic symptoms, intellectual disabilities, and current involvement in psychosocial or pharmacological treatment for anxiety problems.

Table 4.1: Demographic and Diagnostic Information

	CBT only (n=9)		CBT+CPT (n=9)		All patients (n=18)	
Sex						
- boys	7	(78%)	3	(33%)	10	(56%)
- girls	2	(22%)	6	(67%)	8	(44%)
Mean age in years (SD)	10.8	(2.2)	9.9	(2.0)	10.3	(2.1)
Mean duration of complaints in months (SD)	36.1	(19.8)	32.9	(24.4)	34.4	(21.6)
Primary anxiety disorder						
- separation anxiety	2	(22%)	6	(67%)	8	(44%)
- social anxiety	4	(44%)	3	(33%)	7	(39%)
- generalised anxiety	3	(33%)	-	-	3	(17%)
Comorbidity						
- none	2	(22%)	2	(22%)	4	(22%)
- one comorbid disorder	4	(44%)	4	(44%)	8	(44%)
- two or more comorbid disorders	3	(33%)	3	(33%)	6	(33%)
Former treatment						
- none	3	(33%)	5	(56%)	8	(44%)
- parent training for behavioural problems	2	(22%)	3	(33%)	5	(28%)
- medication	2	(22%)	1	(11%)	3	(17%)
- individual therapy	2	(22%)	-		2	(11%)
Medication during treatment						
- none	7	(78%)	8	(89%)	15	(83%)
- ritalin	2	(22%)	-		2	(11%)
- haldol	-		1	(11%)	1	(6%)
Parental marital status						
- married or cohabitant	8	(89%)	6	(67%)	14	(78%)
- divorced	1	(11%)	2	(22%)	3	(17%)
- widowed	-	-	1	(11%)	1	(5%)

Most children had a primary diagnosis of separation anxiety disorder (n = 8; 44%) or social phobia (n = 7; 39%), and a minority was diagnosed with generalised anxiety disorder (n = 3; 17%). The majority of children had comorbid disorders, mainly other anxiety disorders as social phobia (n=3), generalised anxiety disorder (n=4), separation anxiety (n=2), specific phobia (n=6), or OCD (n=1). Others had a comorbid depression (n=3) or ADHD (n=3). Only 4 children (22%) received one diagnosis, 7 children (39%) had 2 diagnoses, and 7 children (39%) had 3 diagnoses or more.

Three children (17%) currently received pharmacological treatment for other mental problems, including methylphenidate for ADHD and haloperidol for Tourette's syndrome. These drugs were not prescribed for anxiety problems. The dosage of the medications was stabilised for at least three months before treatment was started and was kept constant during treatment until 3 months follow-up. Table 4.1 presents demographic and diagnostic information of the clinical group.

Design

All children received active treatment, which consisted of 12 weekly sessions of cognitive-behavioural therapy. In addition, the families were randomly assigned to one of the following conditions: 1) no extra treatment, or 2) additional cognitive training for the parents, consisting of 7 two-weekly sessions, parallel to the individual treatment of the

child. All sessions lasted 45-60 minutes. Between post-test and 3 months follow-up, no additional treatment was given. One child (5%) dropped out of treatment after 4 sessions. Her school refusal problems led to a change to special education services. Waiting periods and difficulties in the school made it impossible to make a workable exposure hierarchy in adherence to the research protocol.

Measures

Structured Diagnostic Interview

Children were diagnosed by the Anxiety Disorder Interview Schedule (ADIS-C/P; Albano & Silverman, 1994). Both child and parent interviews were held during the pre-, post- and 3-months follow-up assessments. At 15 months follow-up, only parental interviews were held by telephone. All interviews were held by the first author. The ADIS-C/P is a structured interview based on DSM-IV classification of psychopathology (American Psychiatric Association, 1994). It includes not only anxiety disorders, but also allows evaluation of other mental problems as ADHD, depression, dysthymia and conduct disorder. Diagnoses were obtained by the clinician following the ADIS C/P guide (see Albano & Silverman, 1996): the clinician conducted separate interviews with child and parents, and assigned diagnoses that both sources agreed were most interfering in daily life. In case of multiple diagnoses, the diagnosis that was the most interfering was the primary diagnosis. Research findings of the DSM-III-R-version of the instrument indicated acceptable reliability and validity for this diagnostic procedure (Silverman and Nelles, 1988).

Self-report measures

New self-report measures were developed because we needed measures that would provide comparable parent and child data and that also fitted well with the DSM-IV criteria of the anxiety disorders included in this study (separation anxiety, social phobia and generalised anxiety disorder).

Fear Questionnaire (child and parent version)

All children and parents filled out a child-version of the Fear-Questionnaire, both about the fears of the child (Nauta & Scholing, 1997). The original Fear Questionnaire (Marks & Matthews, 1979) was developed to measure avoidance of phobic situations by adult persons. This scale exists of 15 items, rated on a 0-8 scale (0=situation is never avoided, 8 = situation is always avoided), and includes 3 anxiety scales: agoraphobia, social phobia and fear of blood/injury. Nauta and Scholing (1997) modified the social phobia-items into comparable child relevant items (e.g. 'speaking in front of the class or asking a question'), added a 5-item scale for separation anxiety (e.g. 'staying home alone in the daytime'), and added separate instructions for child and parent. Since the present study did not include children with primary agoraphobia or primary fear of blood/injury, these scales were excluded in statistical analyses, leaving separation anxiety and social phobia as outcome measures. Each subscale had a range of 0-40. Alpha coefficients revealed satisfactory reliabilities for all scales: for social phobia .84 in child reports; .89 in parent reports; and for separation anxiety .82 in child reports, and .72 in parent reports. In case both parents filled out the measures separately, their mean score was used in the analysis.

Scale for Worry in Children (child and parent version)
The Scale for Worry in Children (Nauta & Scholing, 1997) was developed to measure the distress in daily life caused by worry, which is by definition a key symptom of generalised anxiety disorder. It includes both a parent and a child report. The scale consists of 5 items on a 0-4 range, indicating the amount of distress the worry causes the child. An example of an item is 'Do you worry about school and grades?', with scores from 0 = 'no worry, no distress' to 4 = 'worry, a lot of distress'. Reliabilities were satisfactory for both parent and child reports (alpha = .78 and .69 respectively). For reasons of comparability to ratings on the Fear Questionnaire, scores were multiplied by 2, yielding a range of 0-40 for this subscale as well.

Treatments
Individual cognitive behaviour therapy for the child (CBT)
Children were individually treated by a Dutch version of Kendall's 'Coping-Cat' workbook (Kendall, 1990). The main adaptations included a shortening of the therapy to a 12-session program (instead of 16 sessions) and an earlier start of exposure exercises (in session 4 instead of session 9). The key ingredient in this program is graduated exposure in vivo exercises. Children practice at the outpatient clinic during the weekly sessions, as well as daily at home. During the treatment sessions, children learn tools to help them cope with anxiety, including recognition of anxious feelings and bodily symptoms, relaxation exercises, recognition of anxious thoughts, formulation of helping thoughts, coping techniques, evaluation of their performance, and appropriate self-reinforcement. The first three sessions are focused on the rationale of cognitive behavioural therapy, and on the first tool to cope with anxiety (relaxation exercises). Throughout the remaining 9 sessions, children learn the other coping skills described above and are instructed to practice them in anxiety-provoking situations in vivo exposure. This treatment included parent sessions after sessions 2 and 7. During these sessions, the therapist explained the role of in vivo exposures, and discussed possibilities for in vivo exposure assignments at home or at school. This information was discussed with the child to complete the exposure hierarchy. The focus of the parent sessions was on the therapy of the child. The role of the parents and their worries concerning their own capacities, for example, were not directly addressed.

Cognitive parent training (CPT)
The cognitive parent training (CPT) was developed to run in parallel with the individual CBT of the child. Parents assigned to the parent training condition received 7 sessions (weeks 1, 2, 3, 5, 7, 9, 11), often at the same time as the child sessions, with a different therapist.
The manual for the cognitive parent training (Nauta & Scholing, 1998) is based on the principles of cognitive therapy (see also Beck, 1995). It focuses on parental cognitions and behaviour provoked by anxious behaviour of the child. During the first sessions, parents receive psycho-education on anxiety in children, training in problem solving, and training in reward of courageous behaviour. During homework assignments, they learn to identify their thoughts about anxious behaviour of their child. These cognitions are summarised in core beliefs: a general theme in the thoughts that provokes parental behaviour. For instance, a parent may feel anxious, thinking 'if I do not comfort my child, she will only cry louder and

louder, and she will feel lonely and left alone by her mother'. Another thought, such as 'I remember my parents leaving me alone when I was a child and I do not want my child to feel so abandoned' might intensify this feeling. The core belief for this parent could be 'A good mother always comforts her child and prevents the child from being upset'. Another parent may be irritated and feeling manipulated by the child that 'always gets her way by her anxious behaviour'. It is assumed that these cognitions largely and differently influence parental behaviour. Thoughts and core-beliefs were challenged during the sessions. The main target was not the rationality of the thought, but rather the helpfulness of the thought. Helpful thoughts assisted parents to act in such a way that they supported their child in coping with anxiety. During this process, alternative thoughts and behaviours were formulated. An alternative thought may be: 'I am a good mother when I teach my child to handle his anxiety by himself instead of solving his problems' or 'By letting my child handle his own anxiety I show him my confidence in his ability to cope'. During the last weeks of therapy, parents engage in behavioural experiments to evaluate their original and alternative thoughts. Each behavioural experiment is concentrated on one particular situation, like 'My child is in his bed and cries. He calls for my help'. The thoughts 'He will only cry louder and louder' and 'He may sometimes be able to calm down himself' are challenged by letting the parents perform supporting behaviour and observe the reaction of the child. The last session includes consolidating helpful behaviour and relapse prevention.

Therapy setting and therapists

The treatments were conducted at the Outpatient Clinic for Child and Adolescent Psychiatry in Groningen, the Netherlands. This outpatient clinic serves three northern provinces of the Netherlands and has about 1400 new referrals each year. Therapists were six advanced clinical psychology students (all women), versed in cognitive behaviour therapy and extensively trained into both treatment manuals. During the interventions, weekly group sessions were held with all therapists, supervised by a senior cognitive behavioural therapist. During those sessions problems that occurred during treatment were discussed. Also, audiotapes were listened to in order to approve treatment and check treatment integrity.

Procedure

All children included in the study were first interviewed and diagnosed during a regular intake evaluation by a psychiatrist or his supervised trainee. If anxiety seemed to be the most prominent problem, children and parents were interviewed separately by a trained clinician with the Anxiety Disorders Interview Schedule for Children (ADIS-C/P; Albano & Silverman, 1994). Parents and children filled out questionnaires and gave information on sociodemographic variables. After the interview, parents and children received information on the outcome study. As soon as parents and teenage children gave their written permission (informed consent) to participate in the study, randomisation was performed to a condition with or without parent training. At pre-treatment, post-treatment, and 3 months follow-up parents and children were interviewed with a semi-structured clinical interview and they filled out questionnaires (see measures). At 15 months follow-up, parents

and children were asked to fill out the questionnaires at home, and the diagnostic interview was held by telephone.

Data analysis

Total fear scores for both child and parent reports, ranging from 0 to 120, were calculated by summing the scores on separation anxiety and social anxiety from the Fear Questionnaire, and the total score from the Scale for Worry in Children. Since the outcome measures used were relatively new measures, pre-treatment scores of clinically anxious children were compared to scores of normal children to investigate discriminant validity. Subsequently, t-tests or non-parametric tests were conducted in order to evaluate the significance of differences between the two treatment conditions in pre-test scores (total fear scores of parental and child reports) and in demographic variables.

To evaluate treatment outcome, contrast variables were computed as effect measures. Contrast variables were computed as the difference scores of 1) post-test and pre-test, 2) 3-months-follow-up and pre-test, and 3) 15-months follow-up and pre-test. The advantage of working with contrast variables is the halving of variables and a reduction of the standard deviations of the mean scores, thus enhancing power (Hoijtink, 2000). 3 (assessments) x 2 (parent and child) ANOVAs were run to evaluate pre- to post-treatment effects and pre-test to 3 and 15 months follow-up treatment effects, with contrast variables as the dependent variable, both for the group as a whole as for testing additional effects of the parent training. In addition, effect sizes were calculated by dividing the contrast variable by its standard deviation (see also Cohen, 1992). The value of this effect size index is regarded as small (.20), medium (.50), or large (.80).

With regard to missing data, imputation by regression was performed: missing data were predicted based on available data (Acock, 1997). We conducted outcome analyses for all present data, followed by analyses including imputed values for missing data. Since results yielded the same patterns of findings for both sets of analyses, we chose to report only the results for available data.

Results

Discriminant validity of outcome measures

The ratings of twenty normal children and their parents, recruited through primary schools, were compared with the ratings of the clinical group. There were no significant group differences on any demographic variable. All outcome measures were significantly higher in the clinical group at alpha = .05, one-tailed (see table 4.2), thus providing evidence that the measures can differentiate between clinical and non-clinical groups.

Pre-treatment comparison of treatment groups

No significant differences were found on demographic variables including sex, age, parental marital status, previous treatment, and duration of complaints. On variables related to diagnoses and severity of complaints, including number of comorbid disorders,

Table 4.2. Discriminate Validity of Outcome Measures

	clinical group (n=18)		normals (n=20)		
	M	(SD)	M	(SD)	p <
Child reports					
separation anxiety	10.7	(7.8)	3.8	(3.4)	.000
social anxiety	11.6	(6.6)	6.3	(3.7)	.003
worry	8.8	(8.5)	4.3	(6.2)	.045
total fear score	31.1	(15.6)	14.4	(8.9)	.000
Parental reports					
separation anxiety	15.0	(6.5)	4.7	(4.3)	.000
social anxiety	15.7	(6.5)	7.8	(2.7)	.000
worry	14.4	(10.4)	6.5	(7.7)	.006
total fear score	45.4	(14.9)	19.1	(13.0)	.000

parental reports on total fear score of the child, and child self-reports on total fear, no significant differences were found as well.

Treatment effectiveness for all children (n=18) at post-test and 3 months follow-up

Diagnostic interview

ADIS-C/P results revealed that at post-treatment, 28% (n=5) of all 18 children did not classify for an anxiety disorder. At 3 months follow-up, 80% of the sample (12 of 15 children) did not meet DSM-IV-criteria of an anxiety disorder.

Self-report-measures

Questionnaires filled out by parents and children showed a decline of anxiety symptoms reported by both parents and children (see figures 1 and 2). Total fear scores in child self-reports dropped significantly from 31.1 (SD=15.6) at pre-test to 22.2 (SD=14.6) at post-test ($F(1,17)=5.6$, $p=.02$) and from pre-test to 18.7 (SD= 18.3) at 3 months follow-up ($F(1,14)=11.0$, $p=.00$). Parental reports on the child's total fear also dropped significantly from 45.4 (SD=14.9) at pre-test to 39.1 (SD=19.2) at post-test ($F(1,17)=3.3$, $p=.04$), and from pre-test to 24.2 at 3 months follow-up (SD=11.4; $F(1,14)=51.2$, $p=.00$).

Figure 1. Child self-reports (n=18) on separation anxiety, social anxiety and worry. M1 = pre-test, M2 = post-test, M3 = 3 months follow-up, M4 = 15 months follow-up

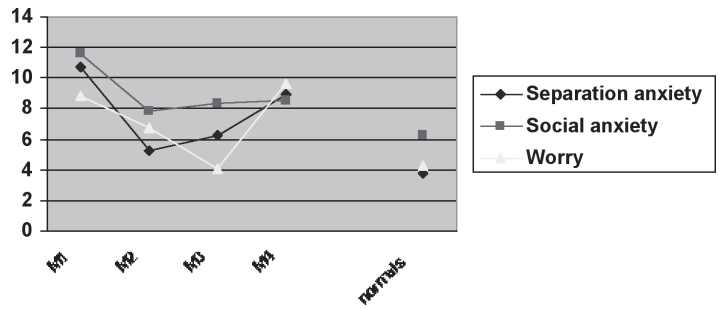
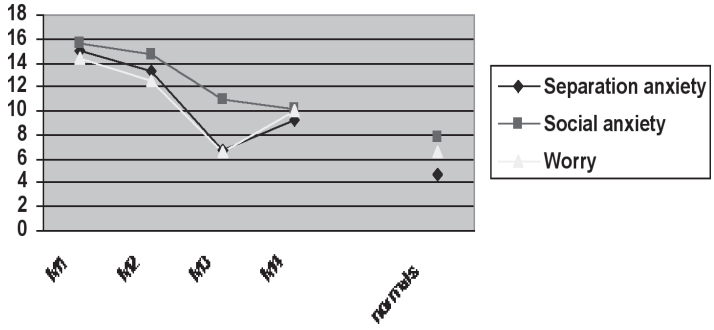


Figure 2: Parental reports (n=18) on child's separation anxiety, social anxiety and worry. M1 = pre-test, M2 = post-test, M3 = 3 months follow-up, M4 = 15 months follow-up

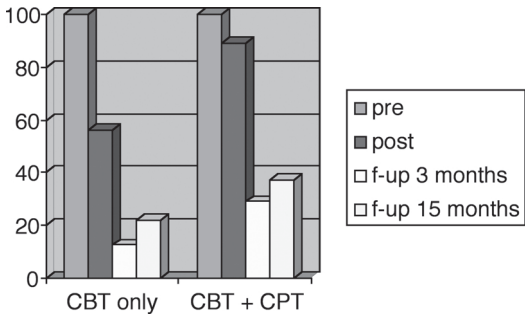


Treatment effectiveness for separate conditions at post-test and 3 months follow-up

Diagnostic interview

According to ADIS-C/P at post-treatment, 44% (n=4) after child-CBT-only and 11% (n=1) after child-CBT+PT did not classify for an anxiety disorder. At 3 months follow-up, these figures were 88% (n=7 of 8 children) and 71% (n=5 of 7 children), respectively. Due to missing data, the latter figures are based on 15 of the 18 children.

Figure 3. ADIS interviews: % of children classifying for an anxiety disorder



Self-report-measures

Questionnaire results showed favourable outcome in both treatment conditions (see table 4.3 and 4.4 for child and parent reports respectively). Separate ANOVAs on the composite measure for child and parent reports revealed no effect for treatment condition.

Results of long-term effects at 15 months follow-up

Treatment history during the follow-up period

Seven children sought additional treatment in the intervening year. One child needed inpatient treatment for anxiety and OCD problems. For one child, separation anxiety led to

Table 4.3: Child Reports (questionnaires) in Both Treatment Conditions

Measure and treatment		pre-treatment (n=18)		post-treatment (n=18)		3 months follow-up (n=15)		15 months follow-up (n=16)	
		M	(SD)	M	(SD)	M	(SD)	M	(SD)
Separation anxiety	CBT only	8.5	(7.2)	5.6	(5.4)	4.7	(5.8)	4.6	(8.7)
	CBT+CPT	12.9	(8.1)	5.0	(4.0)	8.1	(10.4)	14.6	(11.8)
Social anxiety									
	CBT only	13.1	(7.4)	7.9	(7.5)	7.5	(7.7)	6.9	(5.8)
	CBT + CPT	10.1	(5.7)	7.8	(5.9)	9.1	(11.0)	10.6	(5.3)
Worry									
	CBT only	8.4	(8.4)	8.5	(6.9)	5.3	(5.8)	8.0	(10.2)
	CBT + CPT	9.1	(9.1)	5.0	(4.4)	2.9	(2.3)	11.7	(10.3)
Total fear score	CBT only	30.1	(19.1)	21.2	(16.4)	17.5	(17.1)	19.5	(22.5)
	CBT+CPT	32.1	(12.4)	17.8	(8.9)	20.2	(20.7)	36.0	(24.3)

Note: CBT = individualised cognitive behavioural therapy; CPT = Cognitive Parent Training

Table 4.4. Parental Reports (questionnaires) in Both Treatment Conditions

Measure and treatment		pre-treatment (n=18)		post-treatment (n=18)		3 months follow-up (n=15)		15 months follow-up (n=17)	
		M	(SD)	M	(SD)	M	(SD)	M	(SD)
Separation anxiety	CBT only	11.3	(4.5)	9.2	(6.6)	3.9	(2.3)	4.7	(7.3)
	CBT+CPT	18.6	(6.2)	16.9	10.0)	9.9	(4.9)	14.3	(10.6)
Social anxiety									
	CBT only	16.5	(6.7)	12.9	(4.0)	9.4	(4.7)	8.3	(5.4)
	CBT + CPT	14.9	(6.5)	16.2	(8.6)	12.9	(7.8)	12.2	(6.4)
Worry									
	CBT only	15.1	(9.9)	10.3	(5.6)	9.1	(6.8)	8.9	(10.8)
	CBT + CPT	13.8	(11.5)	14.4	(7.6)	3.4	(4.4)	11.3	(8.9)
Total fear score									
	CBT only	43.2	(12.8)	32.2	(13.2)	22.4	(9.8)	22.0	(20.1)
	CBT+CPT	47.6	(17.2)	47.6	(21.0)	26.3	(13.4)	37.8	(21.0)

Note: CBT = individualised cognitive behavioural therapy; CPT = Cognitive Parent Training

persistent school refusal and depressive mood, and she was offered medication and additional CBT sessions. Another child followed an intense social skills training program combined with intense parent training. Two children were prescribed medication for severe oppositional behaviour, and their parents received additional parent training. One family asked for additional assessment for non-anxiety mental problems. Finally, one child was extremely anxious following a burglary in his house shortly before the 15 months follow-up. He and his family received some additional CBT booster sessions after this follow-up.

Diagnostic interview and global functioning

At 15 months follow-up, ADIS C/P results showed that 71% (n=12) of the 17 children no longer suffered from an anxiety disorder, and 29% (n=5) still suffered from an anxiety disorder. The parents of these five children reported large interference in daily life. They rated the global

functioning of their child from 33 to 60 (scale 0-100; median at 35)), versus scores between 60 and 90 (median at 77) for the other 12 children. Also, they reported comorbidity of severe oppositional behaviour (as the primary disorder in two cases), obsessive-compulsive problems (primary in one case), and depression (secondary in one case).
At this follow-up, ADIS-C/P results were somewhat more favourable for the child-only condition: 78% did not suffer from an anxiety disorder, versus 63% in the parent training condition (see also figure 3).

Self-report-measures
Parental reports on the child's total fear dropped significantly from 45.4 (SD=14.9) at pre-test to 29.4 (SD=21.5) at 15 months follow-up ($F(1,16)=6.08$, $p=.01$). For child self-reports however, there were no difference in total fear score between pre-treatment (M=31.1, SD=15.6) and 15 months follow-up (M=27.1, SD=24.2; $F(1,15)=.33$, $p=.53$). Interestingly, standard deviations at the 15-months follow-up were substantially larger than at earlier assessments, suggesting large differences between individuals in level of improvement.

Effect sizes
The effect sizes for this treatment were large at three months follow-up for both parental and child self-reports (table 4.5). In contrast, at 15 months follow-up the effect size was medium based on parental reports and small based on child self-reports.

Table 4.5. Effect Sizes

	pre-test – 3 months f/up	pre-test – 15 months f/up
Child self-report: total fear score	0.86	0.14
Parent report: total fear score	1.86	0.60

Note that the value of this effect size index is regarded as small (.20), medium (.50), or large (.80).

Exploratory analysis of relapse at 15 months follow-up
The larger standard deviations at the 15 months follow-up raise the question of prognostic variables, i.e. whether children still anxious at this follow-up can be distinguished from the recovered children at earlier assessments. Since the number of children was low in this study, we only conducted some exploratory analyses on the sample. Correlations were calculated to evaluate the relationship between 15 months follow-up levels of fear on one hand, and initial levels of anxiety (both child and parent reports), age, duration of complaints, pre-treatment number of comorbid diagnoses, and pre-treatment impairment by anxiety on the other hand (table 4.6). No significant correlations were found between pre-treatment measures and 15 months follow-up data.
Only a significant correlation was found between parent reports of fear at the 3 months and the 15 months follow-up and, in analogy, a correlation between the impairment at 3 months and 15 months follow-up.

Table 4.6. Correlations between Predictor Variables and Child Anxiety Levels at 15 Months Follow-up

	Child self-report	Parent report
Age	-.31	-.34
Duration of complaints	-.29	-.09
Impairment by anxiety at pre-treatment	.29	.20
Number of comorbid disorders at pre treatment	.08	.07
Total fear at pre-treatment: child self-report	.24	.27
Total fear at pre-treatment: parent report	-.34	.06
Impairment by anxiety at 3 months follow-up	.25	.63*
Total fear at 3 months follow-up: child self-report	.17	.38
Total fear at 3 months follow-up: parent report	.13	.58*

Note: *: $p < .05$

Discussion

The aim of the present study was to investigate the effectiveness of protocollised treatment for anxiety disorders in a setting for child psychiatry, and to investigate the possible surplus value of a parent-training program. This study indicated that the majority of clinically referred children profited of cognitive behavioural therapy: most children received no anxiety diagnosis at three months and fifteen months follow-up. Parental reports showed a decrease of anxiety symptoms over time. Whereas the percentages of diagnosis-free children at follow-ups were comparable to earlier research findings (e.g. Kendall, 1994; Barrett et al., 1996), the results of this study differ from them in three ways.

First, we found that results were manifest at three months follow-up rather than at post-treatment. Second, according to child self-reports, the benefits did not consolidate over time for the group as a whole. In contrast, we saw large differences between those who were recovered and those who were still experiencing problems related to anxiety and other problems. Thirdly, we found no additional value of parental training.

A majority of children still experienced anxiety symptoms at post-treatment, and managed to overcome problems during the three months after treatment. This effect was especially manifest in parental reports. This could reflect a mechanism of sowing (training skills during treatment) and reaping (mastering anxiety afterwards). Another explanation could be that the perception of parents changes slowly: parents need more positive experiences with their child before they actually report their child to be low on symptoms. This effect may be specific to these children referred to a setting for child psychiatry.

Contrary to earlier research findings (e.g. Kendall & Southam-Gerow, 1996), child self-reports revealed a relapse of treatment gains at 15 months follow-up. In parental reports, there was a decrease of anxiety symptoms compared to the pre-treatment scores, but the gains were reduced compared to the 3 months follow-up. In both child and parent reports, standard deviations at follow-up increased remarkably: some children were really doing better, whereas others were doing worse. It seems that - while the group was homogeneous at the start - at long-term follow-up there was a clear distinction between those doing better and those doing worse, including multiple school refusal, oppositional behaviour, OCD complaints, and depression. These findings are in line with the study by Last, Perrin,

Hersen & Kazdin (1996) showing that about 30% of children treated for anxiety disorders develop a new mental disorder at follow-ups, indicating that clinically referred children may be at risk for additional mental disorders over time.

The preliminary analyses on relapse at the 15 months follow-up suggest that we can identify the children that will relapse after treatment only at three months follow-up rather than by pre-treatment scores. It is necessary to investigate the best options for those children that still report anxiety three months after treatment. Perhaps regular booster sessions are important for those children and their parents. These booster sessions should also cover problems related to comorbid disorders such as oppositional behaviour. Further studies are necessary to scrutinise the specific factors that contribute to the maintenance of therapeutic gains.

It was hypothesised that additional parent training would positively influence the results of CBT for the children. Contrary to other studies (e.g. Cobham et al., 1998), we found no effect of parental involvement, neither in diagnostic interviews, nor in questionnaires; neither at post-treatment, nor at follow-ups. Perhaps, this intervention is simply too short to change parental beliefs and behaviour. Another explanation is that this intervention does not contain ingredients that add to the benefits of the intensive training program for the children and that the same effects are already reached with the individual CBT. Within this latter program, parents receive a rational for treatment, they help the therapist to set up home exposure exercises during two parent sessions, and (although not actively encouraged) parents have the opportunity to read through the child's workbook and home assignments. They are confronted with their child doing exposure exercises on a daily basis. In short, even if not actively instructed, they are confronted with the CBT intervention, and this may function as both psycho-education and modelling, two interventions that may be extremely powerful. A third explanation possibly lies in the field of parental psychopathology. An outcome study by Cobham, Dadds and Spence (1998) allowed for analysis across parents and made clear that the beneficiary effects of parent training were mainly present for parents who reported anxiety problems themselves. No predictors related to parent psychopathology were included in the present study, so we could not address this issue here. Future research is necessary focussing on this differential effect.

With regard to effect size, we found that the effect size was large at 3 months follow-up, but small (child report) or medium (parent report) at 15 months follow up. This effect was mainly caused by the increase in standard deviation as we described above, due to the heterogeneity of the sample at the 15 months follow-up. The lower effect size at the latter assessment could be a very specific example of the feared gap between labs and clinics (Weisz et al., 1995). Perhaps, lab based treatments are not so easily transportable to clinics; the clinically referred children and their parents may be in need for extra care to prevent relapse.

Limitations

There are also some limitations in this study. First of all, the number of children in this study was low. Within the total group large differences existed among children in (e.g.) severity of complaints, primary diagnosis, and comorbid diagnoses. Despite of

randomisation, more children with separation anxiety were found in the CBT+CPT-group. Future research including more children is necessary, so that differential effects can be analysed. A greater power may also enhance the sensitivity of treatment effects for the different treatment conditions.
Second, there was no control group in this study. However, earlier research has shown that CBT is more effective than a wait-list period (e.g. Kendall, 1994). On the other hand, it was not found to be superior to educational support (Silverman, Ginsburg, Weems, Rabian & Serafani, 1999).

Conclusions
The results of this study demonstrate that CBT is not only effective in research settings, but also in a regular setting for mental health. A parent training program failed to add benefits on the reduction of child anxiety symptoms.

Chapter 5

Cognitive-Behavioural Therapy for Children With Anxiety Disorders in a Clinical Setting: No Additional Effect of a Cognitive Parent Training

Nauta, M.H., Scholing, A., Emmelkamp, P.M.G., & Minderaa, R.B. (2003)
Journal of the American Academy of Child and Adolescent Psychiatry,
42(11), 1270-1278

Abstract

The objective was to evaluate a 12-week cognitive-behavioural treatment program for children with anxiety disorders and the additional value of a seven-session cognitive parent-training program. Seventy-nine children with an anxiety disorder (aged 7-18 years) were randomly assigned to a cognitive behavioural treatment condition or a wait-list control condition. Families in the active treatment condition were randomly assigned to an additional seven-session cognitive parent-training program. Semi-structured diagnostic interviews were conducted with parents and children separately, before and after treatment and at 3 months follow-up. Questionnaires included child self-reports on anxiety and depression and parent reports on child's anxiety and behavioural problems. Children with anxiety disorders showed more treatment gains from cognitive-behavioural therapy than from a wait-list control condition. These results were substantial and significant in parent measures and with regard to diagnostic status, but not in child self-reports. In the active treatment condition, children improved on self-reported anxiety and depression, as well as on parent reports on their child's anxiety problems. These results were equal for clinically referred and recruited children. Child self-reports decreased to the normal mean, whereas parents reported scores that were lower than before treatment but were still elevated from the normal means. No significant outcome differences were found between families with or without additional parent training. In conclusion, Children with anxiety disorders profited from cognitive-behavioural therapy. Children improved equally whether or not additional parent training was offered.

Introduction

Cognitive behavioural therapy for anxious children

In 1994, Kendall published the first controlled study on the effects of cognitive-behavioural therapy (CBT) in children with an anxiety disorder. CBT was rather effective, with approximately 70% of children no longer meeting criteria for an anxiety disorder after CBT, versus 5% in the wait-list control group. Treatment gains were maintained at follow-up 3 to 5 years later (Kendall & Southam-Gerow, 1996). Since then, a number of studies from different research centres have been reported (see Nauta, Scholing, Emmelkamp, & Minderaa, 2001), yielding approximately the same positive results for individualized CBT in anxious children.

Involving the parents

There is some evidence that parents play an important role in both the aetiology and maintenance of their children's anxiety. Apart from a genetic vulnerability to anxiety, parental psychopathology (Warner, Weissman, Mufson, & Wickramaratne, 1999) and parental rearing style (Rapee, 1997) have been found to be associated with anxiety disorders in the offspring. Dealing with parental rearing style may enhance the effectiveness of individual CBT. Barrett and colleagues (1996) found treatment outcome to be somewhat more beneficial for a family-based treatment program, especially for younger children and for girls. At long-term follow-up, however, family-based and child-only treatment showed equal positive results, with 80% of children no longer meeting criteria of the primary anxiety disorder. A nonsignificant trend toward superiority of parental involvement in CBT was found by Spence and colleagues (2000). Mendlowitz et al. (1999) found parental involvement to be superior with regard to the child's active coping, but not in child anxiety levels. Cobham and colleagues (1998) reported an interaction between parental psychopathology and treatment outcome: parent anxiety management training had an additional effect only if the parents reported high levels of anxiety themselves. However, these results were not consistent across all measures. Finally, addressing parental cognitions may strengthen the effects of behavioural interventions. However, a pilot study addressing this issue (Nauta et al., 2001) found no additional effect of a cognitive oriented parent training program to individual CBT. Thus, CBT is a highly effective treatment for anxiety disorders in children, but the exact role of parental involvement in CBT remains to be further examined.

Treatment effectiveness in research settings and in clinical practice

Although the results of CBT in children with anxiety disorders are positive, most of the findings have been reported from university centres rather than mental health centres.

These university centres differ from regular mental health centres in a number of ways (Weisz et al., 1992). First, recruited anxious children may be less seriously disturbed than clinical children. Second, the recruited samples tend to be quite homogeneous due to the exclusion criteria used, such as comorbid disruptive behaviours or depression. Thus, it is highly questionable whether the positive results of CBT generated in university research settings can be replicated in regular clinical practice. So far, meta-analyses have concluded that treatment is far more effective in research settings than in regular mental health clinics (Weisz et al., 1992). Another issue that needs more research is the clinical significance of the results in outcome studies. The studies on CBT clearly show a reduction in anxiety symptoms, but this does not necessarily imply that the children fall within the normal range after therapy (Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999). The present study proceeded along the pilot study by Nauta and colleagues (2001). The samples were entirely different and some improvements were made, such as the inclusion of a wait-list control condition, a much larger sample, the use of more established outcome measures, and the inclusion of an additional clinical setting.

Aims for the current study

The present study evaluated the effects of CBT in anxious children who were regularly referred to mental health clinics and who were recruited for the research project. Four research questions were addressed: (1) Is CBT more effective than a wait-list condition? (2) Does a cognitive parent training (CPT) have a additional value over CBT? (3) Are the results comparable for referred and recruited children? (4) Are the results clinically significant?

Method

Participants

Children were either referred for anxiety problems to one of two mental health centres, or were recruited through GPs, schools, or media for participation in this study. Inclusion criteria were as follows: (1) meeting the criteria of a primary diagnosis of separation anxiety, social phobia, generalized anxiety, or panic with or without agoraphobia (by the Anxiety Disorder Interview Schedule), (2) IQ > 80, (3) age 7 to 18 years, (4) no current psychotherapy or medication for anxiety problems, (5) no CBT in the past 2 years. Comorbid disorders, such as depression, obsessive-compulsive disorder, or attention-deficit/hyperactivity disorder (ADHD), were not exclusion criteria for participation. Of 128 children invited for an intake session, 99 had a primary anxiety disorder, and 89 fulfilled all inclusion criteria. Ten families declined treatment, leaving 79 children in the treatment program. This sample contained 39 boys and 40 girls, all white, aged 7 to 18 years (mean 11.0, SD 2.4). Fifty-one children were referred and 28 were recruited. Most children came from a two-parent household (n = 69 [87%]), eight children had single mothers (10%), and two families consisted of an original parent with a stepparent (3%). The parental level of education was well distributed among the lower level (23 mothers, 19 fathers), middle level (33 mothers, 22 fathers), and higher level (21 mothers, 27 fathers). Twenty-six children had a primary

diagnosis of separation anxiety disorder (33%), 31 social phobia (39%), 15 generalized anxiety disorder (19%), and 7 panic with or without agoraphobia (9%). Seventy percent of the children had one, two, or three comorbid diagnoses, mainly other anxiety disorders, but also depression, dysthymia, oppositional defiant disorder, and ADHD. The average duration of anxiety problems was 37.5 months (SD 25.4, range 5-90 months). In 5% of the children medication had been prescribed for non-anxiety problems at least 3 months before enrolment in the treatment program and was kept constant since then and during treatment. Many children (n = 34 (42%)) had received previous treatment for different mental problems. Three children dropped out of treatment (all before session 5). All dropouts had been assigned to the CBT-only condition. Post-treatment data of these children were collected directly after stopping treatment and were included in the analyses.

Design

Participants were randomly assigned to one of three treatment conditions: (1) CBT only (n = 29), (2) CBT + CPT (n = 30), and (3) wait-list control (n = 20). For practical reasons regarding therapist availability and the absence of a natural waiting list in the settings, children were not assigned to the wait-list condition in the first 3 months of the study. For ethical reasons, children with full school absence (n = 5) were not assigned to the wait-list condition. These two factors led to a relatively low number of children in the wait-list condition. Of these 20 children, 2 (10%) no longer met the criteria for an anxiety disorder after the wait-list period. One family did not continue with the treatment study. These three children were included only in the wait-list analyses. The 17 post-wait-list children were randomised across the two treatment conditions, leading to a total of 37 children receiving CBT only and 39 children receiving CBT + CPT. Assessments were performed before treatment (pre-test), directly after treatment (post-test), and at 3 months follow-up.

Measures

Diagnostic Interview

The Anxiety Disorder Interview Schedule C/P (ADIS C/P) is a commonly used semi-structured interview based on the DSM-IV classification of psychopathology (American Psychiatric Association, 1994; Silverman et al., 1996). It contains a parent and a child interview schedule that are separately administered. The ADIS C/P evaluates anxiety disorders and other common disorders in children and adolescents, namely ADHD, oppositional defiant disorder, conduct disorder, depression, and dysthymia. The primary diagnosis was the diagnosis that caused the most interference with daily functioning. Interference rates range from 0 (no interference) to 8 (high interference), with rates of 4 and higher indicating a disorder.

Parent Reports

Questionnaires were filled out by the parents together or by the parent who spends the most time with the child.

The Child Behaviour Checklist (CBCL; Achenbach, 1991) consists of 118 items describing a wide domain of behaviour problems of children. Parents rate their child's behaviour

problems on a scale of 0 (does not apply to my child) to 2 (clearly or often). The checklist provides T scores for internalising and externalising behaviour. The scale showed satisfactory psychometric properties and normative data are available.
The Spence Children's Anxiety Scale-parent version (SCAS-p) was developed to measure anxiety symptoms in children as perceived by their parents. It contains the 38 anxiety items that are included in the SCAS (see below), with the formulation of the items changed to the perspective of the parents, leaving the contents identical. The SCAS-p demonstrated good psychometric qualities, including discriminate validity (Nauta et al., 2004).

Child Self-Reports
Children filled out the Spence Children's Anxiety Scale (SCAS; Spence, 1998), a child self-report measure that 1contains 44 items, with each item rated on a 4-point scale (0 = never to 3 = always). A total score can be derived as well as six subscale scores that are closely related to the DSM-IV description of anxiety disorder classifications: panic/agoraphobia, separation anxiety, social phobia, generalized anxiety, obsessive compulsive disorder, and physical injury fears. The questionnaire has shown high internal consistency, good convergent and divergent validity, and satisfactory test-retest reliability.
The Fear Survey Schedule for Children-Revised (FSSC-R; Ollendick, 1983) questionnaire has 80 items on fears in children. Items are scored on a 1 (no fear at all) to 3 (very fearful) scale. The total score ranges from 80 to 240. The questionnaire is widely used, and normative data are available.
The Children's Depression Inventory (CDI; Kovacs, 1992) is a child self-report measure that addresses symptoms of depression in children. All 27 items have three statements, describing different degrees of depressive symptomatology. The child marks the statement that applies best to his or her situation during the past 2 weeks. The CDI has shown adequate to good psychometric properties.

Treatment Setting and Therapists
Therapy was provided by 15 advanced students in clinical psychology and 12 registered child psychologists. Together they carried out 76 individual therapies and 39 CPTs. Therapists were equally involved in individual and parent treatments. Requirements for therapist participation in the study included advanced courses in CBT, additional training in working with the manuals, and weekly team meetings. Sessions were audio taped for two goals: first, to improve treatment quality by discussion in the weekly team meetings, and second, to check treatment integrity. However, no independent ratings were made.

Treatments
Cognitive Behavioural Therapy (CBT)
The CBT was a 12-session Dutch adaptation of the Coping Cat program (Kendall, 1994). The key ingredient in this program is graduated-exposure in vivo exercises that are practiced during sessions and at home. Children learn tools to help them cope with anxiety, including relaxation exercises, formulation of helping thoughts, coping techniques, and appropriate self-reinforcement. The program was adapted on three points: the original 16 sessions were

reduced to 12; the exposure exercises were started in session 4 rather than in session 9, with the skills being taught parallel to the exposure rather than subsequent; and some extra workbook pages were added for adolescents. Some pages were less childish; others were more profound in explaining and applying cognitive techniques such as challenging thoughts. The basis of exposure in vivo tasks and FEAR-steps was maintained for every individual. The individual program included two parent sessions, focusing on explaining the child therapy and getting suggestions for exposure in vivo exercises.

Cognitive Parent Training (CPT)

CPT comprised a short, seven-session intervention, addressing parents' behaviour and their thoughts and feelings regarding their anxious child. Some parents may have feelings of concern ('my child cannot cope with difficult situations on his own'), guilt ('it is my fault that my child is so anxious'), or anger ('she uses her anxiety to get things her way'). Each emotion and thought may lead to different behaviour and interacts differently with the behavioural advice of providing a good balance between challenging and protecting an anxious child. The program was developed to run parallel with the child CBT program, with a different therapist. The first sessions provided psycho education on anxiety disorders in children, followed by behavioural advice and pragmatic parenting skills. The counselling included encouraging coping behaviour, stimulating independent behaviour, and considering intermediate steps in conquering difficult situations. Parents were also trained in problem-solving skills. The parents were asked to describe the situation, their thoughts and feelings, their behaviour, and the consequences of their behaviour. In the second part of CPT they were taught to challenge their automatic thoughts, and several behavioural experiments were conducted. The last session addressed the thoughts and feelings of the parents with regard to potential relapse. Both treatment manuals can be obtained from the first author.

Procedure

Three settings participated in this study: the Academic Centre for Child and Adolescent Psychiatry in Groningen (ACCAPG), the youth department of the Centre for Mental Health, and the university department of clinical psychology. The two first centres are the main regional centres for mental health for the mid-sized town of Groningen and its rural surroundings. For the first two centres, children were referred by their GP for anxiety problems. Children and parents went through a regular intake evaluation by a psychologist, psychiatrist, or a supervised trainee, mostly consisting of five diagnostic sessions. If the child had a primary anxiety disorder, the family was invited for an intake session of the anxiety program, where parents and children were interviewed separately with the ADIS C/P. If the child met the criteria of the study, the study was explained to the family. Parents and children (older than 12 years) gave their oral and written informed consent to participate in the study. Then randomisation was performed.

Families who enrolled through the university department had heard about the program through the media or school. After a telephonic screening, families were invited to the university for the ADIS C/P. Children who met all inclusion criteria were referred to the

ACCAPG. They went through a short intake evaluation by a child psychiatrist and were then enrolled in the anxiety program for treatment. Four families declined treatment because they regarded the referral to a psychiatric clinic as aversive.

Statistical Analyses

A priori power analyses were conducted to establish sample size. Since no data were available on the means and standard deviations of the main outcome measures, effect sizes were estimated rather than calculated. The effect size for the difference between the active treatment condition and the wait-list control condition needed to be large, whereas a medium effect size was required for the difference between the two active treatment conditions. A large effect size for the latter cannot be expected because of the strong effect sizes of child CBT, and a small effect size would not be clinically relevant. With alpha set at 0.10, the minimal sample size for the wait-list control group was 14, and the sample size for each active treatment condition was 36 (Cohen, 1992).

Multivariate analyses of variance (MANOVAs) for repeated measures were conducted separately for parent and child reports to evaluate overall time effects for treatment conditions, for groups, and for interactions between time and groups. Only in case of significant multivariate results for the interaction between time and groups, the univariate results were examined. The complete results can be obtained from the first author. In the four families who did not participate in the follow-up assessment, regression analyses were conducted to predict the values of these missing data (imputation by regression; Acock, 1997). This procedure yields more representative results than just reporting available data or using the last observation carried forward.

Results

Pre-treatment Comparisons

The children in the active and wait-list treatment condition did not differ significantly on demographic variables or level of anxiety. With regard to the children in the two active treatment conditions, no difference was found in demographic variables and in most variables related to pre-treatment anxiety. The only difference found was that children in the CPT condition had longer histories of anxiety than children in the child-only condition (means of 44 months and 30 months, respectively; $F(1,74) = 5.7$, $p < .05$). In the comparison between the 48 referred and the 28 recruited children, we found no significant difference between the groups on any demographic variable or any pre-treatment outcome measure in child or parent reports.

Treatment Effectiveness

Wait-List Versus Active Treatment

Of the 20 children in the wait-list control condition, 2 (10%) did not meet the criteria of an anxiety disorder after the wait-list period. In contrast, 32 (54%) of the children in the active treatment condition were free of an anxiety diagnosis after CBT. This difference found in

percentage recovery between the two treatment conditions was significant (χ^2 = 9.6; p<.001, one-tailed). To compare the wait-list group with the active treatment group, two 2 (groups) x 2 (time) MANOVAs for repeated measures were conducted, one on parent reports on the child's anxiety (SCAS-p and CBCL-internalising) and one on child self-reports (SCAS-c and FSSC-R). On the parent reports, a significant time effect was found (F(2,76) = 15.67, p <.001), no significant main effect for groups (F(1,77) = 0.29, p<.75), and a significant interaction effect between time and groups (F(2,76) = 4.81, p<.01). Univariate analyses on parents reports revealed a significant differential effect for the SCAS-p (F(1,77) = 7.04, p<.002) and CBCL-int (F(1,77) = 7.34, p<.001). On externalising behaviour, tested separately, no significant differencewas found (F(1,77) = 1.70, p <.70).
Results of MANOVAs on the child self-report measures indicated a significant time effect (F(2,76) = 15.81, p<.001), no significant effect for groups (F(1,77)= 0.53, p<.59), and no significant interaction effect between time and groups (F(2,76) = 2.56, p<.08). On the CDI, tested separately, no significant time or group or interaction effect was found (F(1,77) = 0.57, p<.80).

Separate Treatment Conditions
At post-treatment, 20 (54%) of the 37 children in the CBT condition and 23 (59%) of the 39 children in the CBT + CPT condition did not meet criteria for an anxiety disorder. At 3 months follow-up, these figures were 23 (68%) and 27 (69%), respectively. With regard to the severity of anxiety, the rates based on the clinical interview showed a decrease of interference by anxiety. MANOVA analyses for repeated measures (in a 2 [groups] x 3 [time] design) indicated a highly significant time effect for interference by anxiety (F(2,73) = 94.0, p<.001), no effect for treatment condition (F(1,74) = 0.5, p<.49), and no interaction effect between time and treatment condition (F(2,73) = 0.6, p<.57). Table 5.1 summarizes the findings with regard to the parent measures of the child's symptomatology. All anxiety measures showed a decrement in symptoms over time. 2 (group) x 3 (time) MANOVA analyses for repeated measures showed a significant time effect on two parent measures together (SCAS-p, CBCL-int; F2,73 = 32.6, p<.001). There was no significant effect of treatment condition (F(1,74) = 0.94, p<.39), and no significant interaction effect (F(2,73) = 0.98, p<.43) .
All child measures showed a decrease in symptoms between pre-test and post-test and between pre-test and 3 months follow-up (Table 5.1). MANOVAs for repeated measures (3 [time] x 2 [group]) revealed a significant time effect on two main child measures together (FSSC-R and SCAS; F(2,73) = 35.9, p<.001), no effect for treatment condition (F(1,74) = 0.64, p<.53), and no interaction effect (F(2,73)= 0.23, p<.92).

Referred Versus Recruited Children.
At post-treatment, 13 of the 28 recruited children no longer met the criteria for an anxiety disorder (46%). For the referred children, this figure was 28 of 48 children (58%). At 3 months follow-up, 15 of the 27 recruited children (56%) and 32 of the 46 referred children (70%) were free of any anxiety disorder. The difference in percentage recovery rate was not significant at post-treatment (χ^2 = 2.68, p<.26) or at follow-up (χ^2= 4.56, p<.10). The

Table 5.1. Descriptives of Outcome Measures in two Treatment Conditions

			Pre (n=76)	Post (n=76)	Follow-up 3 months (n=73)
Parent measures	SCAS-parent				
		CBT	31.9 (12.4)	20.0 (9.1)	17.0 (8.9)
		CBT+CPT	32.8 (12.3)	23.4 (11.4)	19.6 (12.4)
	CBCL internalising				
		CBT	71.5 (9.5)	61.7 (9.5)	57.4 (12.9)
		CBT+CPT	72.1 (9.2)	64.6 (9.4)	61.8 (12.2)
	CBCL externalising				
		CBT	54.1 (12.5)	49.2 (10.5)	51.1 (11.9)
		CBT+CPT	55.0 (8.2)	51.8 (9.1)	49.8 (11.0)
Child measures	SCAS-c				
		CBT	31.3 (12.2)	19.6 (8.1)	14.9 (7.8)
		CBT+CPT	32.8 (16.4)	22.2 (16.1)	18.9 (16.0)
	FSSC-R				
		CBT	130.6 (22.0)	113.5 (19.5)	102.7 (20.0)
		CBT+CPT	132.5 (25.9)	116.2 (23.6)	108.2 (24.9)
	CDI				
		CBT	10.6 (7.2)	8.0 (5.9)	7.1 (5.8)
		CBT+CPT	11.0 (6.1)	7.5 (5.8)	7.1 (6.2)
Clinical interview	Interference of primary diagnosis	CBT	6.2 (0.9)	3.3 (2.6)	2.6 (2.6)
		CBT+CPT	6.0 (1.1)	3.2 (2.4)	2.8 (2.5)

SCAS = Spence Children's Anxiety Scale, CBCL = Child Behaviour Checklist, FSSC-R = fear Survey Schedule for Children – Revised, CDI = Child Depression Inventory, CBT = cognitive behavioural therapy, CPT = cognitive parent training

questionnaire filled out by parent or child revealed no differential effect between referred and recruited children with regard to anxiety, depression, and externalising behaviour.

Clinical Significance

To illustrate clinical significance, the step-by-step procedure for normative comparisons was used (Kendall et al., 1999). Analyses were conducted separately on parent and child measures: the SCAS-p and SCAS-c. To establish clinical equivalence, the figures show the mean scores of the clinical group at three assessments and the mean and standard deviation of a normal control group. Results were rated as clinically significant if post-treatment scores were significantly lower than pre-treatment scores, and post-treatment scores were within the range of a normative group. For these purposes, standard t scores were computed for statistical difference ($_{trad}$t), as well as for clinical equivalency ($_{C.E.}$t). A one-side normative comparison was considered appropriate, and the upper range of closeness delta was calculated using 1 SD of the mean in the normal control group. The null hypothesis is that the post-treatment mean scores are equal to the mean scores of normal controls + 1 SD (which is the upper limit of the normal range).

Normative data of the SCAS-p were available from a sample of 216 parents in the normal population: mean = 14.2 (SD 9.7) (Nauta et al., 2004). The range of closeness was defined by use of the standard deviation, delta = 9.7. With regard to the post-test scores of the active treatment condition, the clinical equivalency t tests revealed that post-treatment scores were not clinically equivalent to the normative group, and the traditional t test showed that there was still a significant difference between the post-treatment mean scores and the

normative means. ($_{C.E.}t(75) = 1.27$, $p > .10$), $_{trad}t(75) = 4.60$, $p<.001$). At 3 months follow-up the mean scores were tested to be equivalent to the normative menas, but there was still a difference between follow-up scores and normative scores ($_{C.E.}t(75) = 4.09$, $_{trad}t(75) = 3.26$, $p < .001$). Hence, at follow-up, parent scores dropped significantly but did not reach the level of normal controls. The findings are shown in figure 1.

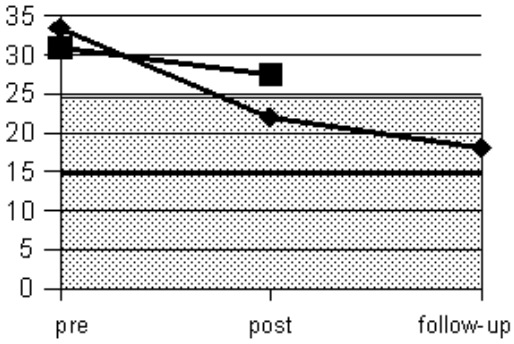


FIG. 5 1. Mean pre-treatment, posttreatment, and follow-up scores of the Spence Children's Anxiety Scale-parent version, for the active treatment (black diamonds) and the wait-list control (black squares) groups, along with a normative range (dotted area) for comparison

Normative data were available from a normal sample of Dutch schoolchildren (n = 2061, mean = 21.0, SD 12.2; Nauta, unpublished data). Children were comparable in terms of age and gender. The range of closeness was chosen by means of the standard deviation, leading to delta = 12.3. Clinical equivalency t tests revealed that scores of the active treatment condition were clinically equivalent to the normative group, both at posttreatment and at follow-up ($_{C.E.}t(75) = 7.4$, $p<.001$), $_{C.E.}t(75) = 49.6$, $p<.001$). The scores at posttreatment did not differ significantly from the normative mean ($_{trad}t(75) = 0.29$, $p > .50$). The child scores at follow-up were even significantly lower than the mean in the normative group ($_{trad}t(75) = 1.84$, $p < .05$). In conclusion, child reports showed posttreatment and follow-up scores that were no higher than the normative means, and that were clinically equivalent to the normative group. These findings are illustrated in Figure 2.

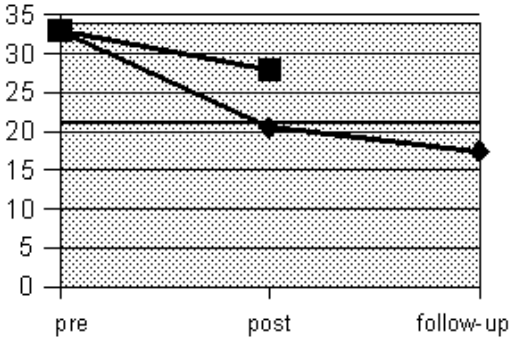


FIG. 5 2. Mean pre-treatment, posttreatment, and follow-up scores of the Spence Children's Anxiety Scale, for the active treatment (black diamonds) and the wait-list control (black squares) groups, along with a normative range (dotted area) for comparison.

Effect Sizes

Effect sizes were reported to evaluate the magnitude of treatment gains. They were computed by dividing each contrast variable by its standard deviation. Table 5.2 displays the effect sizes for several measures. Both parent and child anxiety measures showed large effect sizes, ranging from 0.92 to 1.69.

Table 5.2. Effect Sizes for Improvement

	Pre – post (n=76)	Pre- follow-up 3 months (n=73)
Child anxiety, parent report (SCAS-parent, CBCL-int)	1.15	1.69
Externalising behaviour (CBCL-ext)	0.59	0.50
Child anxiety (FSSC-R, SCAS)	0.89	1.33
Depression (CDI)	0.53	0.62
Interference of primary diagnosis (ADIS)	1.29	1.46

SCAS = Spence Children's Anxiety Scale, CBCL = Child Behaviour Checklist, FSSC-R = fear Survey Schedule for Children – Revised, CDI = Child Depression Inventory, ADIS = Anxiety Disorders Interview Schedule

Differential Outcome Effect: Child-Related Variables

Two 3 (time) x 2 (gender) x 2 (condition) MANOVAs for repeated measures were conducted to evaluate differential gender effects, with parent and child measures separately. A significant gender effect was found in both parent reports ($F(1,74) = 53.9$, $p<.001$) and child self-reports ($F(1,74) = 81.9$, $p<.001$), with girls showing significant higher levels of anxiety at all assessments. The was no significant interaction effect between time, gender, and condition, either in parent reports ($F(2,70) = 0.16$, $p<.98$) or child self-reports ($F(2,70) = 0.17$, $p<.98$). This indicates that boys and girls showed equal gains from treatment in both treatment conditions, even though they started and ended at different levels of anxiety. Age was not related to treatment outcome: correlations between age and anxiety levels at all three measurement times and in both child and parent reports were non-significant and ranged from -0.12 to 0.17. When divided into two age groups, a 3 (times) x 2 (groups) x 2 (condition) MANOVA for repeated measures revealed no significant interaction effect ($F(2,70) = 0.44$, $p<.78$), indication that the children in both age groups showed equally positive results, without any superior effect of treatment condition.

The duration of complaints was related to anxiety levels at follow-up in both parent reports ($r = 0.31$, $p<.001$) and self-reports ($r = 0.27$, $p<.001$), indicating that children with longer histories of anxiety still had more anxiety symptoms after treatment. A 3 (time) by 2 (condition) MANCOVA for repeated measures (with duration of complaints included as a covariate) revelaed that there was still no effect for treatment condition when the duration of complaints was accounted for ($F(1,64) = 0.18$, $p<.95$). Hence, the duration of complaints had a negative effect on outcome, despite treatment condition.

Discussion

Effectiveness of Cognitive Behavioural therapy and the Cognitive Parent Training

Results of this study were partly positive: with regard to diagnostic status and parent reports, children reached significantly higher treatment gains in the active treatment

condition than in the wait-list control group. In contrast, the difference between the active and wait-list condition failed to reach significance in child self-reports. This may be due to test-retest reliability, which is not high (but acceptable) for the SCAS child self-report in a normal sample (Spence, 1998) and may be poorer in a clinical sample, where scores are higher and may be more influenced by regression to the mean. Children may also have failed to acknowledge anxiety prior to treatment and developed their ability to do so with CBT, thus negating self-reported improvement. After active treatment, 54% of the children no longer met the criteria of an anxiety disorder, versus 10% in the wait-list control condition. At 3 months follow-up, 68% of the children no longer met the criteria for any anxiety disorder. These percentages seem to be somewhat lower than reported in earlier studies (Kendall, 1994: 70% at follow-up; Barrett et al., 1996: 84%). One may want to conclude that the intervention was not as successful in clinical practice as in the research settings. However, this disparity is probably an artefact since those studies have reported the percentage of children that have recovered from their original primary anxiety diagnosis, and not necessarily from any anxiety disorder. In this study, these percentages of children recovered from their original primary diagnosis were respectively 70% (post), 78% (three months). Since we know from prevalence studies that the specific primary anxiety disorder in children is not stable over time (Costello et al., 2003), percentages of full recovery need to be reported in future studies.

Contrary to our expectations, we found no additional effect of CPT. Since a measure to assess changes in parental cognitions was unavailable, we were not able to assess whether parental cognitions changed but did not influence the anxiety of the child, or whether these cognitions did not change at all. Contrary to earlier parent interventions, this parent-training program not only provided behavioural guidelines but also addressed parental thoughts and beliefs. Perhaps this was too much for a seven-session program and did not allow parents to change their thoughts and behaviour. The cognitive interventions may need more sessions to establish results. Another explanation is that parents change during a child intervention whether they are actively instructed to do so or not. In the two parent sessions in the individual CBT, and through reading the child workbook and being confronted with daily exercises, parents may already change some of their maladaptive cognitions about their child's anxiety and change their behaviour along the lines of the treatment program. Also, we cannot exclude the possibility that results may have been different if the therapist for the parent training and the child intervention had been the same person for each family, thus making it easier for the parent therapist to customize the parental interventions to the individual child characteristics. Finally, we may hypothesize that the effect of CPT may be manifest after a longer period of time.

All three dropouts were in the individual treatment condition. This finding suggests that involving the parents in CBT may buffer the risk of dropout from treatment.

Treatment effectiveness in research settings and in clinical practice

With regard to the referred and recruited children, we found no differences in pre-treatment anxiety and comorbidity or in outcome. We cannot exclude the possibility that this can be attributed to the extra diagnostic sessions for the referred children. However, we

suggest that other factors may play an important role in the difference in treatment effectiveness between research treatment and regular practice, as found by (Weisz & Weiss, 1989). These factors include the exclusive focus on one problem, the specific training of the therapists, the use of structured protocols, and the standard monitoring of the therapists. Implementing these procedures may enhance treatment effectiveness in clinical settings.

Clinically significant change

With regard to clinically significant change, most children and parents reported significantly lower levels of anxiety at posttreatment and follow-ups, the mean scores after treatment being within the normal range. The children were in fact indistinguishable from the normative group. However, parents still indicated elevated levels of anxiety, not comparable to normal controls. At pre-test parents already reported higher levels of anxiety than their children did. One may interpret these findings by the tendency of parents with anxiety or depression problems to overreport anxiety symptoms in their children (Najman et al., 2001), or by children underreporting their anxiety symptoms. The reports may also reflect the reality, with children still showing elevated levels of anxiety after treatment. With severe clinical cases as in the present study, expecting a fall within the normal range after treatment may indeed not be realistic.

Effects of age and gender

No differential treatment effects were found with regard to gender or age as such, or related to treatment condition. However, girls were found to report higher levels of anxiety than boys at all assessments. This is in line with earlier findings on child anxiety measures (e.g., Spence, 1998). More research is needed to examine other predictors of treatment outcome for the different treatment conditions.

Limitations

This was the first controlled study in which CPT was evaluated. Although results suggest that CPT does not enhance the effects of CBT, apart perhaps from preventing dropout, one should not throw away the baby with the bath water. The program can clearly be improved, and specific measures could be developed to assess the maladaptive parental cognitions as well as observable parent-child interactions in order to investigate whether CPT is capable of changing parental cognitions or behaviour. Given that parent-training programs may be effective, as discussed in the beginning of this article, there is a clear need to investigate what treatment ingredients are effective in parent training programs.

Although treatment was audiotaped and overheard in weekly supervision sessions by the senior author, no independent ratings were made to check whether therapists carefully followed the manuals. Nevertheless, it is unlikely that therapies missed the prescribed ingredients. The children in the sample were all white, which limits the generalisability of the results. However, this figure is quite representative for mental health care in the north of the Netherlands, with relatively small numbers of ethnic minorities. Also, most children came from intact, two-parent households. Findings may have been different in single parent or divorced families. Another limitation is that the same CBT program was applied in

all children, without any tailoring to the specific disorders. For adults, however, highly specialized interventions have been developed for each anxiety disorder. Developing a list of specific techniques for the various anxiety disorders in childhood may enhance treatment gains.

Clinical implications

Treatment manuals for children with anxiety disorders and a variety of comorbid disorders can be successfully implemented in clinical settings. The fact that this study did not receive any extra funding and that local clinicians carried it out strongly supports the generalisability to community, non-research settings. Additional parent training does not necessarily enhance the reduction of anxiety symptoms in children. However, children may be more likely to complete treatment if their parents are involved in treatment. Effect sizes were much larger than found in general clinical practice (Weisz et al., 1992), thus implying that the research procedure, standardized protocols, training, regular intervision, and monitoring of treatment gains may enhance treatment effectiveness in clinical settings.

Chapter 6

Predicting treatment outcome for anxious children: child characteristics

Nauta, M.H., Scholing, A., Emmelkamp, P.M.G., & Minderaa, R.B.
(submitted)

Abstract

The predictive value of child related variables was examined in relation to CBT outcome for 76 anxiety-disordered children aged 8-16 years. There was no predictive value for gender, age, primary anxiety disorder, symptoms of externalising or pervasive developmental disorders, or child attachment. Treatment failure was associated with pre-treatment severity, duration of complaints, comorbid depressive and OCD symptoms, a high number of comorbid diagnoses, prior treatment, and lower intelligence. In a regression analysis prior treatment, comorbidity, and intelligence emerged as the best predictors for treatment failure. Treatment gains were predicted by internalising symptoms, duration of complaints, and intelligence. Duration of complaints emerged as the strongest predictor for treatment gains. Long-term treatment failure was predicted from post-treatment comorbidity, severity and impairment, and none of the post-treatment variables were associated with treatment gains between post-test and one year follow-up. Additional parent training had no interaction effect with any of the variables and treatment outcome. Clinical implications for the findings are discussed.

Introduction

Only since 1994 controlled trials on treatment outcome for anxiety disordered children have been reported in the literature (Kendall, 1994). Given this relatively new development, it is not surprising that research on prognostic child variables for treatment outcome in anxiety disorders in children is scarce. This paper summarises research that was conducted on some child related factors that may be of influence of therapy outcome, namely age, gender, primary diagnosis, severity and duration of complaints, comorbidity, intelligence, and attachment style, and evaluates these factors as potential predictors for successful CBT treatment in anxiety disordered children.

Age

Several studies investigating outcome for CBT in anxiety disordered children found that age was not associated with treatment outcome (Beidel et al., 2000: n=67, 8-12 years; Berman et al., 2000: n=106, 6-17 years; Nauta et al., 2001: n=18, 8-15 years; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002: n=42, 5-17 years). One study on school phobia indicated that younger children might profit more from treatment (Last et al., 1998: n=56, 6-17 years): younger children were more likely to achieve at least 95% school attendance at post-treatment. Southam-Gerow and collaegues (2001: n=135, 7-15 years) also found that older child age was associated with poorer treatment outcome. Finally, Barrett and collaegues (1996: n=79, 7-14 years) found that parental involvement was especially beneficial for younger children, and Cobham and collaegues (1998: n=67, 7-14 years) found that individual CBT was especially beneficiary for the older age group. In all, studies either found no effect for age, or a less favourable outcome for older children.

Gender

The child's gender was not of any prognostic value in most studies (Beidel et al., 2000; Berman et al., 2000; Treadwell et al., 1995: n=178, 9-13 years; Cobham et al., 1998; Last et al., 1998, Nauta et al., 2001, Piacentini et al., 2002). In the study of Mendlowitz et al. (1999) however, there was a clear gender-effect: boys reported an increase in anxiety after treatment, whereas girls reported a decrease of anxiety after treatment. Barrett et al. (1996) reported that additional parental involvement was especially beneficiary for (younger) girls. In the study of Cobham et al. (1998), an interaction effect between gender, parental anxiety, and parent training emerged: girls were found to have better treatment gains if the parents did not suffer from anxiety, and additional parent training was especially beneficial to girls if the parents did report high levels of anxiety. This effect was not present for boys. At 12 months follow-up, the gender effect was no longer present.

Primary diagnosis

Three studies examined the effect of initial primary anxiety diagnosis on treatment outcome, and they all found that children with primary social phobia, generalised anxiety, separation anxiety, and specific phobia benefited equally from CBT (Cobham et al., 1998; Barrett et al., 1996; Berman et al., 2000).

Pre-treatment severity of anxiety symptoms

Severity of anxiety at pre-treatment may well have a large impact on treatment success or failure. Southam-Gerow et al. (2001) reported that child self-reports were not associated with treatment outcome, but maternal reports of child's internalising problems at pre-test was associated with poorer outcome at post-treatment and at one year follow-up. In a study on childhood OCD, Piacentini et al. (2002) reported that higher levels of obsessions were related to poorer outcome.

Duration of complaints

So far, there has not been much attention for the impact of duration of complaints on treatment outcome for anxious children. Only Last et al. (1998) included this variable in their study and concluded that duration of school refusal was not predictive of treatment gains in children with school phobia.

Comorbidity

Comorbidity, such as comorbid anxiety disorders, depressive disorders, externalising disorders, or pervasive developmental disorders, have been hypothesised to have an averse effect on outcome of CBT for anxiety disorders. However, so far, little evidence has supported this hypothesis for childhood anxiety disorders. Most studies found no relationship between comorbidity in general (a heterogeneous mix of anxiety disorders, depressive disorders, or externalising disorders) and treatment outcome at post-treatment and follow-up (Beidel et al., 2000; Berman et al., 2000; Kendall et al., 2001), or at long-term follow-up (Barrett et al., 2001: n=52, aged 14-22 years at 6 years follow-up). In these studies, most children were comorbid with other anxiety disorders, and the numbers of children with diagnosed mood or externalising disorders were too small to allow for meaningful separate analyses.

Not much research has been conducted specifically on comorbid depression and results so far are conflicting. Comorbid depression and higher levels of depressive symptomatology were predictive of treatment failure (Berman et al., 2000). In line with these findings, Piacentini et al. (2002) found depressive symptomatology to be predictive of unfavourable outcome for children with OCD. However, in the study by Southam-Gerow et al. (2001), there was no effect of pre-treatment levels of child reported depressive symptoms. The latter results are comparable to findings in adult anxiety disorders, where also conflicting results are reported see Steketee & Shapiro (1995) for panic disorder, agoraphobia, and OCD; Scholing & Emmelkamp (1999a) for social phobia). The reason given for this diversity is the large variation in methodology (Steketee & Shapiro, 1995).

With regard to externalising symptoms, only one relatively small study Toren et al. (2000)

concluded that anxious children comorbid with ADHD were relatively more likely to still suffer from an anxiety disorder at long-term follow-up, whereas Berman et al. (2000), Kendall et al. (2001), and Southam-Gerow et al. (2001) reported no effect of externalising symptoms or diagnosis at pre-treatment.

In today's clinical practice, clinicians often encounter children with symptoms of pervasive developmental disorders (including autistic disorder, Asperger's disorder, Rett's disorder, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (PDDNOS)). The main characteristics are qualitative impairment in social interaction and communication, and a restricted repertoire of activities and interests. The final category, PDDNOS, comprises children that suffer from these characteristics, without meeting all criteria for any of the other pervasive developmental disorders. Many children with symptoms of pervasive developmental disorders also have other disorders, such as anxiety disorders. It has been suggested that these children may be less able to benefit from a treatment for an anxiety disorder than children without pervasive developmental disorders (Hoofdakker & Scholing, 2002). The child may lack motivation, may have difficulty to understand instructions or to adhere to homework assignments, and may have difficulty in generalising the learnt skills or applying them automatically. In addition, the problems in social interaction may be manifest in the therapeutic relationship. For instance, the child may be more difficult to reach in social rewards. So far, no study has investigated the effects of PDDNOS symptoms on treatment outcome for comorbid disorders such as anxiety.

Intelligence

Two studies in anxious adults investigated the impact of intelligence on CBT-outcome (Haaga, DeRubeis, Stewart, & Beck, 1991; Hoogduin & Duivenvoorden, 1988). Level of intelligence (within the normal range) was not related to CBT-outcome in adults. Non-significant relationships were in the opposite direction of the prediction in the Haaga et al. (1991) study, with lower intelligence leading to better treatment outcome. This issue has not been investigated in anxious children.

Attachment style

The final child characteristic that may influence treatment gains is the child's attachment style. Attachment behaviour is a natural reaction of a child to danger or insecurity, and attachment styles are categorised as either secure or insecure. Securely attached children will go to their caregivers for support and thus regulate their anxiety or distress. Two main patterns of insecure attachment style can be distinguished. The first is the anxious-avoidant (fearful) attachment style. Children with an avoidant attachment style do not seek comfort in their caregivers, and avoid showing their emotions of anxiety or distress. Children with an anxious-resistant (ambivalent / preoccupied) attachment will do anything to get their caregivers attention, but also display anger and rejective behaviour towards them. They are not easily soothed. Later research has added a third category of insecurely attached children, including the children that showed a combination of both avoidant and ambivalent behaviour. This category was classified as desorganised attachment, which is

characterised by a lack of consistency in strategies towards caregivers in times of danger or distress (Main & Solomon, 1990). Childhood insecure attachment is associated with internalising symptoms (Erickson, Sroufe, & Egeland, 1985) and childhood anxiety symptoms (Muris, Meesters, Van Melick, & Zwambag, 2001). Ambivalent attachment in particular is associated with the development of anxiety disorders (Warren et al., 1997). Anxiety disordered children that go through CBT sessions including exposure assignments will frequently experience periods of anxiety or distress. Presumably, the children that are insecurely attached and therefore have difficulty to regulate their emotions will be less able to benefit from CBT. So far, no outcome study in childhood literature has addressed this issue.

Aim of the present study

The aim of the present study was to identify child characteristics that are predictive of treatment outcome for children treated with CBT for their anxiety disorder. Predictor variables included age, gender, primary diagnosis, comorbidity, severity and duration of complaints, intelligence, and attachment style.

Method

For a more detailed description on participants, procedure, therapies, treatment settings and therapists, the reader is referred to (Nauta et al., 2003).

Participants

In this study, 76 children with anxiety disorders were included. They were 50% boys and aged 7-17 years (mean age 11.0, SD=2.4). Most children lived in two parent households (n=68, 90%). All children had a primary diagnosis of an anxiety disorder, namely separation anxiety disorder (n=23, 30%), social phobia (n=29, 38%), generalised anxiety disorder (n=17, 22%), and panic with or without agoraphobia (n=7, 10%). A majority of children (n= 57, 75%) had one, two or three comorbid disorders. These disorders were most commonly anxiety disorders, less frequently mood disorders, ADHD and ODD.

Design

Children were randomly assigned to two treatment conditions: 37 children received CBT only, and 39 children received CBT + CGT. Before treatment, both outcome measures and possible predictor measures were assessed. Outcome measures were reassessed at post-treatment, three months follow-up, and one-year follow-up. In this study, only the post-treatment and one year follow-up data were used. All 76 children engaged in post-treatment assessments. At one-year follow-up, 69 children participated in the assessment. Three children dropped out of treatment, and no follow-up data were collected. For the other four children that did not participate in the one-year follow-up, an estimation of their scores was computed by imputation by regression (Acock, 1997). Predictor variables included pre-, post and three months follow-up data.

Procedure

Children were treated at the Academic Centre for Child and Adolescent Psychiatry in Groningen (ACCAPG) or the youth department of the Centre for Mental Health. 56 children were referred to these regular regional centres for mental health by their GP. A part of the children (n = 17) were recruited through the media for this particular study. These children were diagnosed at the university department of clinical psychology and then referred to the ACCAPG for treatment. All children went through a regular intake procedure by a psychiatrist, psychologist, social worker, or a supervised trainee. This procedure contained normally approximately 5 sessions. Children with a primary anxiety disorder entered the anxiety program. The child and the parents were interviewed separately with a semi-structured clinical interview. Families meeting the criteria of the study received information about participation. Family members (older then 12 years) gave written informed consent to participation in the study.

Therapists

Therapists were 15 advanced students in clinical psychology and 12 registered child psychologists. 76 child therapies and 39 parent therapies were conducted. Therapists participated equally in the child and the parent intervention. All therapists had followed advanced courses in CBT, received intensive training in working with the manuals, and attended weekly intervision sessions.

Treatments

Cognitive Behavioural Therapy (CBT)

CBT for children consisted of 12 sessions of individual therapy. The program was a Dutch adaptation of Kendall's Coping Cat program (Kendall et al., 1990). The main focus was on exposure in vivo: children constructed an individualised anxiety hierarchy, and carried out exposure in vivo exercises during treatment sessions and at home. Children learnt different skills to handle their anxiety, such as relaxation exercises, cognitive restructuring, coping skills, and rewarding courageous behaviour. The child therapist conducted two parent sessions, in which she informed the parents about the treatment program, and required for useful exposure in vivo exercises at home or in school. Parental issues on managing their anxious child were not directly addressed and no behavioural advises were given.

Cognitive Parent Training (CPT)

The cognitive parent training (CPT) was developed to run in parallel with the child therapy, with a different therapist. It is a 7-session intervention that addresses both parental behaviour and parental thoughts and feelings. The program starts out with psycho education on anxiety (aetiology, prevalence, characteristics of the anxiety disorders). Next, the cognitive behavioural framework is explained to the parents in terms of cognitions leading to feelings, these leading to behaviour with different consequences. The framework is explained for both the child's and the parent's point of view. Then, the parents learn to detect their own cognitions and feelings regarding their anxious child. These thoughts are challenged, and coping thoughts are formulated along with coping behaviour. The coping

behaviour was strengthened by several behavioural advises. The new behaviour was tested in behavioural experiments. The last session was spent on preventing and handling relapse.

Measures

Diagnostic interview

Anxiety Disorder Interview Schedule (ADIS C/P; Silverman & Albano, 1996)

The ADIS-C/P is a commonly used semi-structured interview based on the DSM-IV classification of psychopathology (American Psychiatric Association, 1994). It contains a parent and a child interview schedule that are separately administered. The ADIS C/P was developed to evaluate not only anxiety disorders in children but also a variety of other common disorders in children and adolescents, namely ADHD, oppositional disorder, conduct disorder, depression, and dysthymia.). The primary diagnosis was the diagnosis that caused most interference with daily functioning. Interference rates range from 0 (no interference) to 8 (high interference), with rates of 4 and higher indicating a disorder. After the interview, parents are asked to estimate the duration of the child's anxiety disorder. All children and parents were submitted to the ADIS interview at pre-, post- and follow-up assessments. Interviews were conducted by experienced clinicians that received training beforehand.

Child self-reports

Spence Children's Anxiety Scale (SCAS; Spence, 1998)

Children filled out the SCAS, a child self-report measure that contains 44 items, with each items rated on a 4-point scale (0= never to 3= always). A total score can be derived as well as 6 subscale scores that are closely related to DSM-IV description of anxiety disorder classifications: Panic / agoraphobia (9 items), Separation anxiety (6 items), Social anxiety (6 items), Generalised anxiety (6 items), Obsessive compulsive disorder (6 items), and Physical injury fears (5 items). Six items are positively worded filler items and are not included in analyses. The questionnaire has been found to have good psychometric properties (Spence, 1998). In this study, only the total scale was included (38 items), which had a Cronbach's alpha of .88.

Child Depression Inventory (CDI; Kovacs, 1992)

The CDI is a child self-report measure that addresses symptoms of depression in children. All 27 items have three statements, describing different degrees of depressive symptomatology. The child marks the statement that applies best to his or her situation during the past 2 weeks. The total score ranges from 0-27. The CDI has shown adequate to good psychometric properties (Kovacs, 1992).

Wechsler's Intelligence Scale -Revised (WISC-R; Wechsler, 1999)

Four subscales of the Dutch version of the WISC-III (WISC-RN; Van Haasen et al., 1996), were used, namely Block Design, Similarities, Information, and Picture Arrangement. Dutch norm data and regression coefficients were used to compute an estimate of the child's total intelligence (Serra et al., 1995).

Relationship Questionnaire - child version (RQ-C)

The Relationship Questionnaire for Children is a child self-report on attachment. It is

derived from the Relationship Questionnaire (Bartholomew et al., 1991). Children are asked to read four descriptions of how one may feel towards oneself and others. They are asked to tack the one description that suits them best. In addition, they rate each description on a 7-point scale (1 'not at all like me' to 7 'exactly like me'). The descriptions are indicative of respectively the secure, fearful, preoccupied, and dismissing attachment style and include the following:

1. I feel good with people that I know well. I trust other people and I enjoy it if others trust me and count on me. I do not worry about loneliness. I think people take me the way I am.' (= secure attachment, positive image of self and others).
2. 'I need few people in my life. I like the feeling of not needing other people. I also want other others to feel that they can do without me. I think people can notice that I feel that way.' (= dismissing, negative about self, negative about others).
3. 'I would prefer to talk about all my feelings with others. I notice that others do not want that as much as I do. It is important to me to talk to others about my little secrets. Sometimes I worry that others may not like me as much as I like them' (= preoccupied, negative about self, positive about others).
4. 'I do not tell much about myself to others. I do not like being alone, but I find it hard to trust others and to show them that I need them. I am afraid that I will get hurt if I tell too much about myself to others' (= fearful, positive about self, negative about others).

Parent reports

Questionnaires on the child were filled out by the parents together, or by the parent that spend most time with the child.

Spence Children's Anxiety Scale - parent version (SCAS-p; Spence, 1999)

The SCAS-p was developed to measure anxiety symptoms in children. Like the SCAS child self-report it contains 38 items that each refer to one of the same six clusters of anxiety symptoms. The SCAS-p has demonstrated good psychometric qualities including discriminate validity (Nauta et al., 2004). Cronbach's alpha in this study for the total scale was .85.

Child Behaviour CheckList (CBCL; Achenbach, 1991)

The CBCL is a commonly used parent measure to assess child behaviour problems. It includes 118 items addressing behavioural and emotional problems. Parents are asked to evaluate whether the behaviour is not true (0) for their child, somewhat or sometimes true (1), or very true or often true (2), now or during the past six months. Two subscales are derived from the measure, namely internalising and externalising behaviour. The psychometric properties of this scale have been well established and the measure is widely used internationally.

Children's Social Behaviour Questionnaire (CSBQ; Luteijn, Hartman, Serra, & Minderaa, 2003)

The CBSQ is a 49-item questionnaire, developed to measure symptoms of the Pervasive Developmental Disorder Not otherwise Specified (PDDNOS), a highly interfering childhood disorder. Parents rate their child's behaviour on a 3-point scale, indicating whether the behaviour 0 'does not apply at all', 'applies slightly or infrequently' (1) or 'applies clearly or often' (2). The scale has 6 subscales as well as one total scale. The following domains are

addressed: Emotions/behaviour not being optimally tuned to the situation, the tendency to withdraw in social situations, little need for contact, orientation problems, difficulties in understanding and sensing social information, stereotyped behaviour, and fear of changes. The scale has shown good internal consistency and was evaluated in large samples of different clinical groups.

Statistical analyses

Predicting treatment success or failure from pre-treatment variables

First, univariate ANOVAs were conducted to investigate pre-treatment differences between the group of children that had treatment success (no more anxiety disorder diagnosis according to the ADIS C/P) and treatment failure (still anxiety diagnosis) at post-treatment and at one-year follow-up. To prevent type II errors in this step, alpha was set at 0.10 (Stevens, 1996). The next step was to examine which of the variables contributed most to the prediction of treatment success or failure. In order to augment power in these analyses, the number of variables was decreased. Variables that showed pre-treatment differences (at alpha <.10) and that were theoretically related and empirically correlated, were examined in a higher order factor analysis. Based on these results, the old variables were transformed to z-scores and combined into one variable. Then, two logistic regression analyses were conducted, predicting improvement at post-treatment and at one-year follow-up. Variables were entered in a stepwise forward procedure.

Predicting treatment gains from pre-treatment variables

Residual gain scores (RGSs) were computed for the outcome variables. RGSs are the post (FUP) scores minus the pre scores multiplied by the correlation between the two. Hence, the RGSs reflect the amount of improvement corrected for pre-treatment scores. The two main outcome variables, namely one child self-report (SCAS) and one parent report (SCAS-P), were taken together as one variable. We chose to combine the child self-report (SCAS) and the parent report (SCAS-P) to reduce the number of outcome variables, because anxiety was the main outcome measure in this study and these scales had the advantage of containing similar items but filled out by different sources. Then, bivariate correlations between RGSs and predictor variables were computed.

Third, all variables that correlated significantly with the RGSs were chosen as predictor variables in the regression analyses. To prevent type II errors in this step, we chose to set alpha at 0.10 (Stevens, 1996).

The next step was to diminish the number of variables, thus augmenting power for the final analyses. If the selected variables were theoretically related and empirically correlated, a higher order factor analysis on the variables was performed. The old variables were then transformed to z-scores, and combined with each other according to the results of the higher order factor analyses.

Then, two regression analyses were conducted, predicting improvement at post-treatment and at one-year follow-up. Variables were entered in a stepwise procedure.

Finally, in order to analyse differential treatment effects, the same regression analyses were conducted, but then with the treatment condition forced into the equation first.

Predicting treatment success or failure at one year follow-up from post-treatment variables
These analyses were conducted in the same way as in section 2.7.1., with post-treatment data entered as predictor variables, and follow-up diagnostic status entered as the dependent variable.

Predicting treatment gains at one year follow-up from post-treatment variables
These analyses were conducted in the same way as in section 2.7.2., with post-treatment data entered as predictor variables, and follow-up diagnostic status entered as the dependent variable.

Results

Predicting treatment success or failure from pre-treatment variables

Pre-treatment predictors of treatment success or failure
Table 6.1 displays the descriptives and frequencies of possible predictor variables in four groups, namely the children that had no diagnosis at post-treatment (success), those that still had an anxiety disorder diagnosis at post-treatment (failures), and treatment successes and failures at one year follow-up. F-test statistics are displayed for continuous variables, as well as the non-parametrical Chi Square statistics for nominal or ordinal variables.
Results show that numerous pre-treatment variables showed a significant difference ($p<.05$) between the treatment success versus failure groups. At post-treatment, children that had no anxiety diagnosis were more likely to have had no prior treatment, to report lower pre-treatment levels of depression, to have less comorbid disorders at pre-treatment, and to have less anxiety symptoms reported by either the child or the parents. At one year follow-up, children that were considered treatment successes showed a higher intelligence, and reported less symptoms of anxiety or depression at pre-treatment.

Construction of predictor variables of success or failure
The following pre-treatment variables differentiated between treatment success and failure at either post-treatment or follow-up, with alpha set at 0.10: duration of complaints, prior treatment, intelligence, depressive symptoms, OCD symptoms, number of comorbid diagnoses, interference in daily functioning, symptoms of fear, internalising behaviour, secure attachment, and dismissing attachment. Depressive symptoms, OCD symptoms, and number of comorbid diagnoses were analysed in one higher order factor analysis. One factor emerged, explaining 42.8% of variance. The three variables were then combined into one new variable, named comorbidity. Duration of complaints, interference in daily functioning, symptoms of fear, and internalising behaviour were also entered into a higher order factor analysis. This procedure revealed two new factors explaining in total 72.9% of the variance. These new variables ware named duration of complaints and pre-treatment severity / impairment.
With regard to the child's attachment, higher order factor analysis on secure and dismissing attachment style revealed one new factor, explaining 59% of variance. These two variables

Table 6.1. Descriptives of Predictor Variables

	Mean (SD) or N (%)	Post-treatment			One year follow-up		
		Success (n=43)	Failure (n=33)	F or χ^{2a}	Success (n=43)	Failure (n=33)	F or χ^{2a}
Demographic variables							
Age	11.0 (2.4)	10.9 (2.5)	11.2 (2.4)	0.3	11.0 (2.2)	10.8 (2.8)	0.2
Gender							
- Boys	38 (50%)	24 (63%)	14 (37%)	*1.4*	25 (71%)	10 (29%)	*2.3*
- Girls	38 (50%)	19 (50%)	19 (50%)		20 (54%)	17 (46%)	
Duration of complaints in months	37.5 (25.4)	32.1 (23.2)	44.2 (26.8)	3.8*	35.9 (25.7)	40.6 (25.7)	0.5
Prior treatment							
- Yes	41 (54%)	28 (68%)	13 (32%)	*5.0***	28 (68%)	13 (32%)	*1.6*
- No	33 (43%)	14 (42%)	19 (58%)		16 (53%)	14 (47%)	
- Unknown	2 (3%)						
Primary diagnosis							
- Separation anxiety	23 (30%)	13 (57%)	10 (43%)	*1.3*	15 (68%)	7 (32%)	*2.8*
- Social phobia	19 (38%)	15 (52%)	14 (48%)		15 (56%)	12 (44%)	
- Generalised anxiety	17 (22%)	10 (59%)	7 (41%)		9 (56%)	7 (44%)	
- Panic / agoraphobia	7 (10%)	5 (71%)	2 (29%)		6 (86%)	1 (14%)	
Intelligence (WISC-RN)	105.5 (12.3)	105.3 (12.8)	105.7 (11.8)	0.0	108.2 (13.9)	101.2 (8.0)	5.2**
Pre treatment comorbidity							
Child depression (CDI)	10.8 (6.6)	9.4 (6.0)	12.7 (7.0)	4.8**	8.6 (5.2)	14.2 (6.8)	15.0***
Externalising behaviour (CBCL)	54.6 (10.4)	54.4 (11.0)	54.8 (9.8)	0.0	53.6 (9.6)	54.8 (11.6)	0.2
PDDNOS symptoms (CBSQ)	17.1 (14.5)	15.9 (14.0)	18.5 (15.3)	0.5	16.0 (13.8)	17.7 (15.3)	0.2
Comorbid OCD symptoms SCAS (c and p combined)	4.2 (2.7)	3.8 (2.4)	4.7 (3.0)	2.0	3.7 (2.4)	5.1 (3.0)	4.6**
Number of comorbid disorders	1.1 (0.8)	0.9 (0.7)	1.3 (0.8)	5.1**	0.9 (0.8)	1.3 (0.8)	3.8*
Pre treatment severity							
GAF-score (by parents)	52.4 (10.7)	54.3 (11.4)	50.3 (9.8)	1.3	53.2 (12.6)	50.9 (7.3)	0.4
Interference in daily functioning (ADIS, by clinician)	6.1(1.0)	6.0 (1.1)	6.3 (0.9)	2.7	5.9 (1.0)	6.3 (0.9)	3.1*
Symptoms of fear (FFSC-R)	131.5 (24.0)	125.8 (24.6)	139.1 (21.1)	6.2**	126.0 (21.4)	140.0 (26.2)	6.1**
Internalising behaviour (CBCL)	71.8 (9.3)	69.7 (8.6)	74.5 (9.7)	5.3**	69.7 (8.8)	74.5 (8.8)	5.0**
Attachment style							
D Secure	4.6 (1.8)	5.0 (1.6)	4.0 (2.0)	5.6*	4.8 (1.8)	4.2 (1.7)	1.6
A Preoccupied	1.8 (1.0)	1.9 (1.1)	1.7 (1.0)	0.9	1.7 (1.0)	1.9 (1.1)	0.5
B Fearful	3.1 (1.9)	3.1 (1.7)	3.2 (2.2)	0.2	3.5 (2.0)	2.7 (1.7)	2.7
C Dismissing	3.6 (1.9)	3.4 (1.9)	4.0 (1.7)	2.1	3.3 (1.9)	4.2 (1.7)	3.1*

*p<.10, **p<.05, ***p<.001

[a] note that χ^2 statistics are displayed in *italics*

WISC-RN = Wechsler's Intelligence Scale –Revised Netherlands; CDI = Children's Depression Inventory; CBCL = Child Behaviour CheckList; CBSQ = Children's Social Behaviour Questionnaire; SCAS = Spence Children's Anxiety Scale; GAF = General Adaptive Functioning; ADIS = Anxiety Disorder Interview Schedule; FSSC-R= Fear Survey Schedule for Children Revised; PDDNOS = Pervasive developmental disorder not otherwise specified

were then combined into one new variable that was named 'attachment'.

After this construction of predictor variables, there were six predictors left, namely pre-treatment comorbidity, pre-treatment severity, duration of complaints, prior treatment, attachment, and intelligence. The intercorrelations between these variables are displayed in table 6.2.

Table 6.2. Intercorrelations between Constructed Pre-treatment Predictor Variables for Treatment Success or Failure at Post-treatment or Follow-up

	Pre-treatment comorbidity	Pre-treatment severity / impairment	Duration of complaints	Attachment
Pre-treatment severity / impairment	.66**			
Duration of complaints	.16	.13		
Child attachment	.30*	.33**	.15	
Intelligence	-.07	-.20	.04	.08

Logistic regression analyses on diagnostic status

Logistic regression on post-treatment diagnosis revealed a significant regression equation (χ^2= 13.4, p<.001), in which two variables entered, namely comorbidity (B=1.23, SE= 0.49, Wald= 6.29, p<.05) and prior treatment (B=-1.19, SE= 0.61, Wald= 3.81, p<.05).

With regard to one-year follow-up diagnosis, logistic regression revealed a significant regression equation (χ^2= 28.1, p<.001), in which again two variables entered, namely comorbidity (B=2.81, SE= 0.81, Wald=12.15, p<.001) and intelligence (B=-0.07, SE= 0.04, Wald= 4.25, p<.05).

Differential effect with regard to treatment condition

If treatment condition was forced to enter into the equation first, there was no difference in results with regard to the predictive value of the variables. Treatment condition had no predictive value, and comorbidity and prior treatment were still significant predictors at post-treatment, and comorbidity and intelligence at one-year follow-up.

Predicting treatment gains for pre-treatment variables

Pre-treatment predictors of treatment outcome: RGS analyses

Table 6.3 shows the bivariate correlations between the predictor variables and the RGSs at two points in time. Longer duration of complaints and more pre-treatment internalising symptoms were associated with poorer outcome at post-treatment. With regard to one year-follow up treatment gains, longer duration of complaints, more pre-treatment internalising symptoms, and lower intelligence were associated with poorer outcome.

Construction of predictor variables: RGS analyses

Since there were only four variables that correlated significantly at alpha =0.05, no higher order factor analysis was conducted. The four variables selected were age, duration of complaints, intelligence, and internalising symptoms. The intercorrelations between these variables are displayed in table 6.4.

Regression analysis: RGS analyses

Regression analysis on post-treatment RGSs revealed one significant regression equation (R=0.41, R square=0.18, F=11.7, p<.001), in which only one variable entered, namely duration of complaints (Beta = 0.41, t=3.4, p<.001). With regard to one-year follow-up RGSs, again, only duration of complaints (Beta = 0.29, t=2.3, p<.05) entered the regression equation (R=0.29, R square=0.09, F=5.4, p<.05).

Table 6.3. Bivariate Correlations Between Pre-treatment Predictor Variables and Residual Gain Scores (RGSs)

	RGSs Post-treatment	RGSs one year follow-up
Demographic variables		
Age	-.06	-.21*
Duration of complaints in months	.43***	.29**
Intelligence (WISC-RN)	.03	-.24**
Pre treatment comorbidity		
CDI (child depression)	.07	.14
CBCL (externalising problems)	.03	.14
CBSQ (PDD-NOS symptoms)	.09	.08
Total		
Comorbid OCD symptoms		
SCAS child	.06	.09
SCAS parent	.10	.18
Number of comorbid disorders	.13	.17
Pre treatment severity		
GAF-score (by parents)	-.16	-.01
Interference in daily functioning (ADIS, by clinician)	-.03	.05
FFSC-R	.10	.09
CBCL-internalising	.25**	.28**
Attachment style		
D Secure	-.08	-.03
A Preoccupied	.00	-.19
B Fearful	.05	.19
C Dismissing	.11	.07

*p<.10, **p<.05

WISC-RN = Wechsler's Intelligence Scale –Revised Netherlands; CDI = Children's Depression Inventory; CBCL = Child Behaviour CheckList; CBSQ = Children's Social Behaviour Questionnaire; SCAS = Spence Children's Anxiety Scale; GAF = General Adaptive Functioning; ADIS = Anxiety Disorder Interview Schedule; FSSC-R= Fear Survey Schedule for Children Revised

Table 6.4. Intercorrelations between Pre-treatment Predictor Variables for Treatment Gains at Post-treatment or Follow-up

	Duration of complaints	Internalising symptoms	Age
Internalising symptoms	.37**		
Age	.12	-.08	
Intelligence	.04	-.08	.16

** p<.01

Differential treatment effects

Regression analyses were conducted with treatment condition forced to enter the equation first. This procedure gave the same results as without the treatment condition. Hence, additional parent training was not predictive of child treatment gains, and there was also no interaction effect between treatment condition and treatment gains, neither at post-treatment, nor at follow-up.

Prediction long-term follow-up success or failure from post-treatment variables

Post-treatment predictors of follow-up success or failure

Table 6.5 shows post-treatment scores in two groups, namely children with and without anxiety disorder at one-year follow-up. The results of the F-statistics show that these groups

Table 6.5. Descriptives of Post-treatment Predictor Variables with regard to Treatment Success or Failure at Follow-up

	One year follow-up		
	Success (n=43)	Failure (n=33)	F
Post treatment comorbidity			
CDI (child depression)	5.6 (4.2)	10.6 (6.8)	15.0***
CBCL (externalising problems)	49.5 (8.9)	50.8 (10.6)	0.3
CBSQ (PDD-NOS symptoms)	9.9 (10.0)	12.4 (10.4)	0.3
Comorbid OCD symptoms SCAS-ocd c/p combined	2.2 (1.9)	3.3 (2.9)	3.6*
Number of comorbid disorders	0.2 (0.5)	0.9 (0.8)	17.2***
Post treatment severity			
GAF-score (by parents)	75.0 (10.0)	69.3 (13.2)	2.6
Interference in daily functioning (ADIS, by clinician)	2.1 (2.2)	4.6 (1.8)	25.5***
FFSC-R	109.1 (17.3)	125.7 (24.7)	11.2***
CBCL-internalising	60.6 (8.4)	66.1 (9.1)	6.7**

*p<.10, **p<.05, ***p<.001

WISC-RN = Wechsler's Intelligence Scale –Revised Netherlands; CDI = Children's Depression Inventory; CBCL = Child Behaviour CheckList; CBSQ = Children's Social Behaviour Questionnaire; SCAS = Spence Children's Anxiety Scale; GAF = General Adaptive Functioning; ADIS = Anxiety Disorder Interview Schedule; FSSC-R= Fear Survey Schedule for Children Revised

differed on post-treatment symptoms of depression, fear, OCD and internalising behaviour, as well as interference in daily life and number of comorbid disorders.

Construction of predictor variables of success or failure

In the first higher order factor analysis, interference in daily life, symptoms of fear, and internalising behaviour were included, and 1 factor emerged, explaining 61.5% of the variance. The z-scores of the three variables were combined and the new variable was named 'post-treatment severity'. The second higher order factor analysis included post-treatment symptoms of depression, OCD, and number of comorbid disorders. The factor that emerged explained 50.6% of the variance. The z-scores of the three variables were combined into a new variable that was named 'post-treatment comorbidity'. The two constructed predictor variables had a bivariate correlation of .67(p<.001).

Logistic regression analysis: predicting success or failure at follow-up

A logistic regression was conducted with follow-up diagnostic status as dependent variable and post-treatment severity and comorbidity as covariates. The regression equation that emerged (χ^2= 21.0, p<.001) included only post-treatment comorbidity as significant predictor (B=1.86, SE= 0.50, Wald=14.1, p<.001).

Predicting treatment gains at follow-up from post-treatment variables

Post-treatment predictors of follow-up treatment outcome: RGS analyses

RGSs were computed with regard to treatment gains between post-treatment and follow-up assessments. Table 6.6 summarises the correlations between these RGSs and post-treatment predictor variables. None of the variables showed a significant correlation or a non-significant trend with the RGSs, so no further analyses were conducted.

Table 6.6. Bivariate Correlations between Post-treatment Predictor Variables and Residual Gain Scores (RGSs) at One-year Follow-up

	RGSs: gains between post-treatment and one year follow-up
Post treatment comorbidity	
CDI (child depression)	.11
CBCL (externalising problems)	.03
CBSQ (PDD-NOS symptoms)	.07
Total	
Comorbid OCD symptoms	
SCAS c	-.07
SCAS p	-.02
Number of comorbid disorders	.16
Post treatment severity	
GAF-score (by parents)	-.12
Interference in daily functioning (ADIS, by clinician)	-.01
FFSC-R	.07
CBCL-internalising	.08

*p<.10, **p<.05

CDI = Children's Depression Inventory; CBCL = Child Behaviour CheckList; CBSQ = Children's Social Behaviour Questionnaire; SCAS = Spence Children's Anxiety Scale; GAF = General Adaptive Functioning; ADIS = Anxiety Disorder Interview Schedule; FSSC-R= Fear Survey Schedule for Children Revised

Discussion

The aim of this study was to investigate the predictive value of child characteristics in treatment outcome for anxious children. The sample consisted of 76 children that were mostly clinically referred and showed high rates of impairment and comorbidity.

Age and gender

Age and gender were no significant predictors of treatment outcome in this study. This is in line with many other studies on this topic as described in the Introduction. The broad age range in our sample underscores the findings of others that age does not play an important role attaining treatment success. Even though no differential treatment effect was found, it is still possible that treatment effectiveness can be enhanced for all age groups by adapting interventions to developmental theory (Ollendick, Grills, & King, 2001).

Primary anxiety disorder

The primary specific anxiety disorder diagnosis also played no role in treatment outcome, which is in line with all earlier research findings. Possible reasons for this finding are the flexibility of the treatment manual and the therapists, as well as the high rate of comorbidity in the sample. The anxiety disorders tend to show an overlap in symptoms and children often suffer from more than one anxiety disorder. Again, even though no differential treatment effect was found for any of the primary disorders, treatment effectiveness may be enhanced across all anxiety disorders by developing more specific interventions for the separate anxiety disorders, as is common in treating adults.

Severity of complaints

Pre-treatment severity of anxiety symptoms and impairment were related to outcome, both in predicting treatment failure as well as in predicting treatment gains. They also played an important role in predicting treatment failure at long-term by means of post-treatment scores (see also Pelham & Fabiano (2001), or, in adults Scholing et al. (1999a)).

Duration of complaints

Duration of complaints emerged as an important variable in predicting treatment outcome, both in predicting treatment failure as well as treatment gains. Moreover, this variable was the most robust in the analyses where all variables were included to examine treatment gains. No earlier studies have addressed this issue with respect to treating anxiety in children. Steketee and Shapiro (1995) described in their review that duration of complaints does not play an important role in treatment outcome for adults. Perhaps, this factor is particularly important for children, for whom a longer duration means a relative high proportion of their living years being impaired by a disorder, lacking positive experiences with regard to normal developmental tasks with regard to creating a social network, performing in school, and developing age-appropriate independence. So, the more time children have had developing normally and having positive experiences, the more chance they may have to benefit from CBT and get back to 'normal life'.

Prior treatment

Prior treatment emerged as a strong predictor of treatment failure at post-treatment. This variable has not been studied for childhood anxiety before. In a regular clinical practice, where this study was conducted, children often have a history of prior treatment (54% in the current study). Prior treatment was no longer predictive at one-year follow-up. Perhaps, parents and children that received prior treatment need more time to get confidence in established results. In this study, prior treatment was very divers and included medication, parent training programs, diagnostic sessions, group training for social skills, etc. Future research should investigated more closely what kind of prior treatment may lead to treatment failure.

Alternatively, there may be an important fourth variable that explains for the contribution of severity of complaints, duration of complaints, and prior treatment, for instance anxiety sensitivity or a temperamental vulnerability.

Comorbidity: internalising behaviours

With regard to pre-treatment comorbidity, results of our study suggest that children with numerous comorbid disorders and more symptoms of depression are more likely to fail treatment, both at post-treatment and at follow-up. High pre-treatment levels of OCD symptoms appeared to predict worse outcome at long-term follow-up. In addition, post-treatment comorbidity was related to long-term outcome. The variables on comorbidity were, however, not related to the absolute magnitude of treatment gains. So, the children with high levels of comorbidity may relatively benefit as much from therapy, but they will not be 'cured' after 12 sessions. This finding is in line with the studies of Berman et al. (2000)

and Piacentini et al. (2002) and with the parent reports in Southam-Gerow et al. (2001). However, Southam-Gerow et al. (2001) found that child reports on depression were not associated with treatment outcome. The reason for this diversity in findings may be the lack of variability of reported depressive symptomatology. Most studies report an aversive effect of pre-treatment depressive symptomatology. The current study adds that post-treatment levels of depressive symptoms may be indicative of long-term follow-up. Probably, the children with higher levels of depressive symptomatology will need more treatment to get to the point of being without any anxiety disorder. In addition, they may also need interventions that focus on the comorbid depression, such as daily engagement in activities (see also Manassis & Monga, 2001). Last et al. (1997) pointed out that this group of children with anxiety disorders and comorbid depression is at risk for high levels of impairment later in life: in the long-term, they were less likely to be working or in school, and they reported more mental problems than normal controls and children with a history of an anxiety disorder without a comorbid depression. The conclusion from this study and from our present study is that these children need to be carefully monitored and may need extra care in order to prevent long-term averse outcome.

Comorbidity: externalising behaviours

In line with previous research findings, externalising symptoms did not predict treatment success or treatment gains in the current study. In addition, symptoms of pervasive developmental disorders did not influence treatment results either. Given that the children in the present study were included in regular clinical practice, and no exclusion criteria were formulated with regard to these comorbid symptoms, we now have some evidence that children with comorbid symptoms of externalising disorders or pervasive developmental disorders benefit equally well from CBT as children without these symptoms. These results do not imply that adaptations to the program may not enhance treatment effectiveness. Manassis et al. (2001) formulated some guidelines for treating anxiety disorders in children with comorbid ADHD, ODD, or CD. They stressed the importance of increasing structure, addressing learning and behavioural problems, and ensuring ongoing communication between home and school. Even though we cannot draw firm conclusions with regard to children with diagnosed primary ADHD, CD, ODD, or pervasive developmental disorders, this may be a first indication that their comorbid anxiety disorders can be treated relatively well. This is an important issue for clinical practice, where children often present with many comorbid conditions. Future research should shed some light on the benefits for treating comorbid anxiety disorders for these children.

Intelligence

Intelligence emerged as a strong predictor of long-term treatment success, in favour of children with higher intelligence. So, the maintenance of treatment gains seems to be under influence of intellectual capacity. This finding stresses the importance of developing treatment manuals that do not address the intellectual capacity of children too much. The cognitive techniques in particular may be too demanding for some children, requiring recognition of and reflection on negative cognitions, and complex reasoning processes to

change the cognitions. In developing interventions for children and adolescents, the cognitive-developmental level of the child needs to be taken into consideration (see also Ollendick et al. (2001)). In addition, more treatment sessions or more support from parents or schools may be necessary for children with lower intelligence in order to maintain treatment gains. However, in this study, no evidence was found for an interaction effect between a parent training program and the child's intelligence on treatment outcome.

Attachment

The final predictor variable studied was the child's attachment style. Attachment was not significantly related to treatment gains, even though there was a trend suggesting that children that had no anxiety disorder at post-treatment reported higher levels of secure attachment, and that children that still had an anxiety disorder at one year follow-up reported higher levels of the dismissing attachment style. However, these trends disappeared in analyses that included the other predictor variables. In all, this study provides very little empirical support for the hypothesis that attachment style is related to child treatment outcome. It may be that the main reason for this finding lies within the operationalisation of attachment. In children, attachment is most often determined by way of observation and not through child self-report. Moreover, the measure included in this study was used for the first time. However, Muris et al. (2001) described a similar self-report questionnaire and found it related to child anxiety symptomatology in a normal sample. On the other hand, pre-treatment childhood attachment may as well not be related to treatment outcome. Adult attachment researchers have claimed that attachment is relatively stable but may change over the course of therapy (Bowlby, 1988). Perhaps, CBT in fact changed the child's attachment style. It may be that post-treatment attachment style is far more predictive of treatment gains. Future research could include post-treatment data on attachment style in order to investigate change of attachment style, and the impact of post-treatment attachment on long-term treatment outcome.

Methodology

A difficulty in interpreting the findings of this study along the lines of earlier research findings is the large variety in methodology used. Some studies chose a dichotomous variable (success versus failure) to examine outcome variability, based on the ADIS C/P (e.g. Southam-Gerow et al., 2001; Berman et al., 2000) or based on clinical judgement (Piacentini et al., 2002). Others computed partial correlations, correcting for pre-treatment levels of anxiety (Berman et al., 2000). Further studies conducted t-tests or ANOVAs to test whether treatment outcome on questionnaires was different for separate groups (e.g. gender, age groups, race, income, primary diagnosis). Some studies corrected for pre-treatment level of anxiety (Kendall et al., 2001; Treadwell et al., 1995) and others did not (Beidel et al., 2000; Last et al., 1998; Toren et al., 2000). The current study chose to evaluate both treatment success versus failure, and included an advanced technique of residual gain scores, that corrects for pre-treatment levels of anxiety. As in the Berman study (2000), we found that these two procedures lead to different results: the prediction of treatment success and treatment gains are influenced by different factors.

Clinical implications

The huge impact of duration of complaints on treatment outcome at short and long term stresses the need for early intervention. Children with anxiety disorders need to be detected in an early stage, so that the disorder does not endure. This early stage must not be confounded with early age, for age was not related to treatment outcome. Anxiety disorders can come up at different ages, and at all ages clinicians, school counsellors, and GPs must be aware of the importance of prompt referral and a smooth start of cognitive behavioural treatment.

Another clinical implication stems from the impact of comorbid depressive symptoms. Manassis et al. (2001) made some recommendations for the treatment of anxious children that are comorbid with depression. For children with comorbid depressive symptoms, there should be more attention to activating and day schema, and other cognitive interventions should be added.

Brent, Kolko, Birmaher, Baugher, & Bridge (1999) concluded in their outcome study of depressed adolescents that short interventions may be too short for adolescents with severe symptoms, especially for adolescents with comorbid disorders. Analogue with these findings, a clinical implication of our findings may be that children with severe symptomatology of anxiety or comorbid depression need extra sessions and must at least be monitored for a longer period of time. In this light, Brent et al. (1999) stated that for adolescent with depression, recovery will take at least 10 months, and 12-16 weekly sessions will not be sufficient.

Even though depression seems to have a adverse effect on outcome, no such relationship was found for symptoms of externalising disorders of pervasive developmental disorders. The clinical implication of this finding is that children with these comorbid symptoms can be referred for treatment of an anxiety disorder without any drawbacks.

Limitations

Not all children received exactly the same treatment program, with half of the families receiving additional parent training. Therefore, the group is not homogeneous. However, in examining differential treatment effects for these two groups, no difference between the groups was found with regard to treatment effectiveness or predictors of outcome.

Conclusions

In conclusion, child pre-treatment child characteristics seem to have a major impact on treatment success, independent on whether or not their parents received an additional parent-training program. Children with longer duration of complaints, lower intelligence, more severe anxiety symptoms, and comorbid depressive symptoms seem to be at risk for a remaining anxiety diagnosis or less treatment gains at post-treatment or follow-up. This does not necessarily mean that these children will not benefit from a CBT program, but some additions to the treatment program may be in place.

Chapter 7

Predicting treatment outcome for anxious children: parental characteristics: The myth of strong parental influence

Nauta, M.H., Scholing, A., Emmelkamp, P.M.G., & Minderaa, R.B. (submitted)

Abstract

Seventy-three children aged 7-17 years with an anxiety disorder received individual cognitive-behavioural therapy (CBT). Half of the families were randomly assigned to a cognitive parent training (CPT). Child anxiety levels were assessed at pre-treatment, post-treatment, and one-year follow-up. Potential parental predictor variables included parental phobic anxiety and anxious / depressed mood, marital adjustment, current parental rearing, and retrospective reports of the parents' past upbringing. Statistical analyses included analyses of treatment success versus failure, and residual gain scores analyses. A few predictor variables had moderate relationships with treatment gains, but overall regression models were not significant. CPT had no additional effect to CBT, and none of the parental characteristics interacted with treatment condition. Results are discussed and clinical implications are suggested.

Introduction

Although cognitive behavioural therapy (CBT) has been found to be highly effective in treating anxiety disorders in children, 20-40% of children treated do not benefit from treatment. Given the fact that anxiety disorders tend to 'run in families' a closer look at family factors as potential predictor of treatment response seems in order, e.g. parental distress, parental rearing style, and marital adjustment. Research has shown that children with anxiety disorders often have a parent with anxiety or depression (Last et al., 1991). Further, there is some evidence that adults with anxiety disorders have children with more anxiety symptoms than adults without an anxiety disorder (Beidel & Turner, 1997).

Parental psychopathology

Results with respect to parental anxiety or depression as predictor of treatment outcome in their children are inconclusive. Cobham et al. (1998) showed that children (N=67, aged 7-14) of parents with elevated anxiety symptoms were less likely to profit from CBT, especially if the parents were not involved in the treatment program. However, this effect disappeared at one-year follow-up, with no superiority of treatment condition, and no differential effect with regard to parental anxiety. Similarly, Berman et al. (2000) identified parent symptoms of fear, depression, hostility, and paranoia as strong predictors of child treatment gains, mainly for children under the age of 12 (N=106, aged 6-17 years). However, maternal or paternal anxiety or depression symptoms were not related to treatment outcome in anxious children in the study of Crawford and Manassis (2001: N=61, aged 8-12). Contrary to the previous findings, Toren et al. (2000) found that anxious children of mothers with an anxiety disorder improved more than children of non-anxious mothers (N=24, aged 6-13).

Parental rearing

The second familial factor that deserves attention is parental rearing. Retrospectively, many adults with an anxiety disorder report a childhood of affectionless control, which is a lack of warmth, combined with overprotective parental behaviour (Gerlsma et al., 1990). Some studies in the adult literature reported an association between this rearing style and treatment outcome. In OCD, memories of paternal rejection were strongly significant predictors at post-treatment and at 3.5 years follow-up (Emmelkamp, Hoekstra, & Visser, 1985). Maternal rejection was not predictive, whereas maternal overprotection was significantly higher for treatment failures. For adults with panic disorder and agoraphobia, the results were divergent: retrospective reports on parental overprotection were not related to outcome in two studies (de Beurs, 1993; Emmelkamp & Van der Hout, 1983), but did predict outcome in larger studies (Emmelkamp et al., 1985; Emmelkamp et al., 1992). One may argue that, as a consequence of a memory bias, retrospective reports of anxious

adults do not reflect the actual parental rearing style they were exposed to. The parallel of actual, current family functioning in adulthood may be found in literature on expressed emotion. Expressed emotion refers to overinvolvement and perceived criticism of the partner (or closest relative) of the anxious patient. Renshaw, Chambless, and Steketee (2001: N=101, aged 18-62 years) reported a strong relationship between treatment outcome in OCD and agoraphobia and expressed emotion and perceived criticism by a close relative, even when controlled for comorbid conditions such as depressive symptoms. More specifically, emotional overinvolvement and hostility predicted poorer outcome, and higher perceived criticism was predictive of worse response (Chambless & Steketee, 1999).
In short, from adult literature, there is some evidence that parental rearing and expressed emotion may have impact on treatment outcome in adults. So far, only one study examined the impact of parental rearing on treatment outcome in anxious children. Crawford et al. (2001) found that perceived parental frustration with their child's behaviour was related to less favourable outcome for the child treatment (N=61, aged 8-12 years). In addition, anxiety disordered children that perceived more problems in the family, were less likely to improve after treatment.

Parental marital adjustment

The third familial factor associated with treatment outcome is parental marital adjustment. Only one outcome study has included data on parental marital adjustment: Berman et al. (2000: N=106, aged 6-17 years) found that marital adjustment was not associated with treatment outcome for children with an anxiety disorder.
Finally, the degree to which parents were involved in the treatment may be related to treatment outcome in anxious children, but results are inconclusive. (Barrett et al., 1996: N=79, aged 7-14) were the first to report a slightly favourable treatment outcome for a treatment with parental involvement at post-test, but not at follow-up (Barrett et al., 2001). Although Mendlowitz et al. (1999: N= 62, aged 7-12 years) found that parental involvement did not enhance the treatment effect with regard to anxiety symptoms in children, it did enhance the effect on coping strategies in the child. Nauta et al. (2001) found no superior effect of parental involvement on any of the outcome measures.

Aims of the present study

So, there are some indications to expect that familial characteristics play an important part in child improvement during and after treatment. The primary aim of this study was to find out if there is any empirical evidence for the hypotheses derived from these indications. The study examined the impact of parental anxiety and depression, parental rearing style, and marital adjustment on outcome of CBT in anxiety disordered children. First, it was checked whether these familial characteristics in the anxiety-disordered group differed from a normal control group. Next, the impact on treatment outcome was studied. We hypothesised that the impact of these familial characteristics would be stronger for children who received individualised CBT only, than for children whose parents followed an additional cognitive parent training.

Method

For a more detailed description on participants, procedure, therapies, treatment settings and therapists, the reader is referred to Nauta, Scholing, Emmelkamp & Minderaa (2003).

Participants

73 children with anxiety disorders were included in this study; 36 boys and 37 girls, aged 7-17 years (mean age 11.0, SD=2.4). The majority lived in a two-parent household (n=66, 90%), the others lived with a single parent (n=7, 10%). All children had a primary diagnosis of an anxiety disorder, namely separation anxiety disorder (n=22, 30%), social phobia (n=28, 38%), generalised anxiety disorder (n=16, 22%), and panic with or without agoraphobia (n=7, 10%). The majority of children (n=57, 75%) had one, two or three comorbid disorders. These disorders were most commonly anxiety disorders, otherwise mood disorders, ADHD and ODD. The range of the reported duration of the anxiety disorder was 5 to 90 months (mean 37.3, SD=25.6).

The normal control group consisted of 154 children, 111 mothers, and 91 fathers, recruited through primary and secondary schools. The children were aged 8-18 years (mean 12.8, SD=1.8), and they were 82 boys and 74 girls (53% and 47%).

Design

Children were randomly assigned to two treatment conditions: CBT only (n=35), and CBT + CGT (n=38). Before treatment, both outcome measures and possible predictor measures were assessed. Outcome measures were reassessed at post-treatment, and three months and one-year follow-ups. In this study, only the post-treatment and one-year follow-up data were used to predict outcome. All 73 children engaged in post-treatment assessments. At one-year follow-up, 65 children participated in the assessment. Two children dropped out of treatment, and no follow-up data were collected. For the other 6 children that did not participate in the one-year follow-up, an estimation of their scores was computed by imputation by regression (Acock, 1997). Regression variables included post treatment and three months follow-up data.

Procedure

Children were treated at an Academic Centre for Child and Adolescent Psychiatry (ACCAPG) or the youth department of a Centre for Mental Health, both ambulatory centres. 56 children were referred to these centres by their GP. In addition, 17 children were recruited through the media for this particular study. They were diagnosed at the university department of clinical psychology and then referred to the ACCAPG for treatment. All children went through a regular intake procedure by a psychiatrist, psychologist, social worker, or a supervised trainee. This procedure contained approximately 5 sessions. Children with a primary anxiety disorder entered the anxiety program. The child and the parents were interviewed separately with a semi-structured clinical interview. Families meeting the criteria of the study received information about participation. Family members (older then 12 years) gave written informed consent to participation in the study.

Therapists

Therapists were 15 advanced students in clinical psychology and 12 registered child psychologists. 73 child therapies and 38 parent therapies were conducted. Each therapist equally participated in child and parent interventions. The therapists all had followed advanced courses in CBT, received intensive training in working with the manuals, and attended weekly intervision sessions.

Treatments

Cognitive Behavioural Therapy (CBT)

CBT for children consisted of 12 sessions of individual therapy. The program was a Dutch adaptation of Kendall's Coping Cat program (see Kendall, 1994). The main focus was on exposure in vivo: children constructed an individualised anxiety hierarchy, and carried out exposure in vivo exercises during treatment sessions and at home. Children learned different skills to handle their anxiety, such as relaxation exercises, cognitive restructuring, coping skills, and rewarding courageous behaviour. The child therapist conducted two parent sessions, in which she informed the parents about the treatment program, and discussed useful exposure in vivo exercises at home or in school. Parental issues on managing their anxious child were not directly addressed and no behavioural advises were given.

Cognitive Parent Training (CPT)

CPT was developed to run parallel with the child therapy, with a different therapist. CPT is a 7-session intervention that addresses both parental behaviour and parental thoughts and feelings. The program starts out with psycho education on anxiety (aetiology, prevalence, characteristics of the anxiety disorders). Parents receive behavioural advises to handle anxious behaviour of their child. Next, the cognitive behavioural framework is explained in terms of cognitions leading to feelings, these leading to behaviour with different consequences. The framework is explained for both the child's and the parents' point of view. Then, the parents learn to detect their own cognitions and feelings regarding their anxious child. These thoughts are challenged, and coping thoughts are formulated along with coping behaviour. The coping behaviour is strengthened by behavioural advises. The new behaviour is tested in behavioural experiments. The last session is spent on preventing and handling relapse.

Measures

Diagnostic interview

Anxiety Disorder Interview Schedule (ADIS C/P; Silverman et al., 1996)

The ADIS-C/P is a commonly used semi-structured interview based on the DSM-IV classification of psychopathology (American Psychiatric Association, 1994), anxiety disorders as well as other types of psychopathology. It contains a parent and a child interview schedule, which are separately administered. The primary diagnosis is the diagnosis that causes most interference with daily functioning. All children and parents were submitted to the ADIS interview at pre-, post- and follow-up assessments. Interviews were conducted by experienced clinicians that received training beforehand.

Child self-reports

Spence Children's Anxiety Scale (SCAS; Spence, 1998)

Children filled out the SCAS, a child self-report measure that contains 44 items, with each items rated on a 4-point scale (0= never to 3= always). A total score can be derived as well as 6 subscale scores that are closely related to DSM-IV description of anxiety disorder classifications: Panic / agoraphobia, Separation anxiety, Social anxiety, Generalised anxiety, Obsessive compulsive disorder, and Physical injury fears. Six items are positively worded filler items and are not included in analyses. The questionnaire has been found to have good psychometric properties (Spence, 1998). In this study, only the total scale was included, which had a Cronbach's alpha of .88.

Parental Bonding Instrument - child version (PBI-C; Nauta & Scholing, unpublished manuscript)

In this child version of the PBI children were asked to rate their parents' rearing behaviour towards them on the same 25 items as in the original PBI (Parker, Tupling, & Brown, 1979). Items are reformulated for the child, and the child is asked to answer each question with regard to the father and the mother separately. The scale is supposed to measure the same contructs as the original PBI, namely (paternal and maternal) Care and Overprotection. Cronbach's alpha's for these scales were 0.81 (father care), 0.64 (father overprotection), 0.83 (mother care), and 0.66 (mother overprotection).

Parent reports

Questionnaires on the child were filled out by the parents together or by the parent that was spending most time with the child. Questionnaires regarding the individual parent were filled out separately by each parent.

Spence Children's Anxiety Scale - parent version (SCAS-p)

The SCAS-p was developed to measure anxiety symptoms in children. Like the SCAS child self-report, it contains 38 items that each refer to one of the same six clusters of anxiety symptoms. The SCAS-p has demonstrated good psychometric qualities including discriminate validity (Nauta et al., 2004). Cronbach's alpha in this study for the total scale was .85.

General Health Questionnaire (GHQ Dutch version; Koeter & Ormel, 1991)

The GHQ-12 is a questionnaire that consists of 12 items. Each item has four descriptive statements, and the respondent is asked to choose the answer that describes best how the respondent has felt during the past four weeks. The GHQ-12 was found to be a useful tool for identifying mental disorders (e.g. Schmitz et al, 1999). In this study, Cronbach's alphas were .89 in mother reports and .83 in father reports.

Fear Questionnaire (FQ; Marks & Mathews, 1979)

In this study, only the Agoraphobia and Social phobia subscales of the FQ were included (5 items each). All items are rated on fear (0 = not fearful at all'; 8 =extremely fearful, panic') and avoidance (0=would not avoid this situation'; 8 = 'would always avoid it). The mean score on fear and avoidance on the two subscales was included as an indication of parental fear. Cronbach's alphas were .93 in mother reports and .91 in father reports.

Maudsley Marital Questionnaire (MMQ Dutch version; Arrindell, Boelens, & Lambert, 1983)

The MMQ originally contained 20 items in 3 subscales, namely marital, sexual and general life adjustment. In this study, only the 10 items relating to marital adjustment were

included. Subjects rated the items on a 0-8 scale, with higher scores indicating greater adjustment problems in the marital relationship during the past two weeks. The internal consistency in this study was 0.93 for the mother reports, 0.88 for the father reports.

Parental Bonding Instrument (PBI; Parker et al., 1979)

The PBI is a 25 item, retrospective measure on recalled parental rearing practices. Each item is rated on a 1 ('true') to 4 ('not true') scale. Mothers and fathers filled out this instrument recalling their own upbringing as a child. The questionnaire yields ratings for maternal and paternal Care and Overprotection. In this study, the Cronbach's alpha's for the mother reports were 0.93 (mother care), 0.89 (mother overprotection), 0.93 (father care), and 0.86 (father overprotection); for the father reports, 0.92 (mother care), 0.93 (father care), 0.83 (mother overprotection), and 0.83 (father overprotection).

Statistical analyses

First, an overview of the descriptives of the predictor variables was given, with data on the anxious and on the normal control children. Univariate ANOVAs were conducted to evaluate between group differences.

Second, differences in pre-treatment familial characteristics were evaluated between children with and without anxiety diagnosis (according to the ADIS C/P) at post-test and at one-year follow-up. For each variable, two 2 (diagnostic status) by 2 (treatment condition) ANOVAs were conducted in order to evaluate the main effect for diagnostic status and the interaction effect between diagnostic status and treatment condition at post-treatment and at follow-up. Due to missing data we could not perform one MANOVA to check for a multivariate effect first. A MANOVA could only be conducted on the sub-sample that had data on all variables, and that would not be representative for the whole sample (e.g. excluding incomplete families that did not have data on marital adjustment).

Third, residual gain scores (RGS) were computed. RGS are the post-test (FU) scores minus the pre-test scores multiplied by the correlation between the two. Hence, the RGS reflect the amount of improvement, corrected for initial differences between patients and measurement error inherent in the use of repeated measures on the same instrument (Steketee & Chambless, 1992). Lower ratings on SCAS-RGS imply less anxiety at the post-test and thus better treatment outcome. The child self-report (SCAS) and the parent report (SCAS-p) were transformed to z-scores and their mean score was used to compute the RGSs. We chose to combine the child self-report (SCAS) and the parent report (SCAS-P) to reduce the number of outcome variables, because anxiety was the main outcome measure in this study and these scales had the advantage of containing similar items but filled out by different sources.

Fourth, all variables that correlated significantly with the RGS were chosen as predictor variables in the regression analyses. To prevent type II errors in this step, alpha was set at 0.10 (Stevens, 1996).

The next step was to diminish the number of variables, thus augmenting power for the final analyses. If the selected variables were theoretically related and empirically correlated, a higher order factor analysis on the variables was performed. The old variables were then transformed to z-scores, and combined with each other according to the results of the higher order factor analyses.

Then, two regression analyses were conducted, predicting child reported improvement and parent reported improvement at post-treatment and at one-year follow-up. Variables were entered in a stepwise procedure.
In order to analyse differential treatment effects, the same regression analyses were conducted, but then with the treatment condition forced into the equation first.

Results

Preliminary analyses: descriptives of predictor variables
Table 7.1 summarises the results for the predictor variables in the anxiety disordered children and the normal controls children, and their parents. Fathers of children with an anxiety disorder reported significantly more symptoms of fear and avoidance than did control fathers, whereas the mothers reported significantly more symptoms of anxiety and depression. Anxious children reported to experience more overprotection by both their father and mother than did control children, but there was no difference in the degree of warmth children felt from their parents. Similarly, the parents of the anxious children reported more memories of overprotection in their own childhood than did control parents, whereas the level of memorized warmth was the same. There were no differences in reported marital adjustment between the two groups.

Predictors of treatment outcome: diagnostic status
Each predictor variable on a family characteristic was included in two univariate ANOVAs to test for pre-treatment differences between the children that did and did not have an anxiety disorder diagnosis at post-treatment and at one-year follow-up. Because of the multitude of variables (18) a Bonferroni correction was applied and alpha was set at 0.05 / 18 = .003. ANOVAs revealed that none of the family related variables were any different for the children with or without anxiety diagnosis, both at post-treatment and at one-year follow-up.

Differential treatment effects: diagnostic status
Both at post-treatment and at one-year follow-up, none of the variables revealed a significant interaction effect between diagnostic status and treatment condition. Hence, there was no differential effect for treatment condition relative to the familial characteristics.

Predictors of treatment outcome: residual gain scores
Table 7.2 shows the bivariate correlations between the predictor variables and the RGS at two points in time. None of the correlations were significant when the Bonferroni correction was applied (alpha at 0.003). With alpha at 0.10, the following trends were present with respect to post-treatment gains: higher levels of maternal anxious / depressed mood, higher scores of fathers on retrospectively reported maternal overprotection and lack of warmth, and more mother reported marital maladjustment were related with poorer outcome. In contrast, more paternal symptoms of phobic anxiety predicted better treatment outcome for the children.

Table 7.1. Descriptives of Potential Predictor Variables in Anxiety Disordered Children (n=73) and Community Children (n varies between 154 (child report), 111 (mother report), and 91 (father report))

	Anxiety disordered		Normal controls		F
	M	(SD)	M	(SD)	
Parental psychopathology					
Father: phobic fear and avoidance	23.5	(16.5)	18.0	(13.7)	4.84*
Father: anxious and depressed mood	24.0	(3.9)	23.6	(4.9)	0.37
Mother: phobic fear and avoidance	28.0	(20.9)	28.2	(18.6)	0.06
Mother: anxious and depressed mood	25.8	(4.9)	23.3	(5.5)	9.29**
Perceived parental rearing style (current)					
Child: mother overprotection	24.4	5.1	22.9	5.1	3.89*
Child: father overprotection	23.7	5.5	21.7	5.3	6.15*
Child: mother care	42.6	4.4	43.6	3.6	3.12
Child: father care	41.0	5.6	41.4	4.7	0.32
Perceived parental rearing style of parents in their own childhood					
Father: mother overprotection	26.4	6.7	23.9	6.9	4.83*
Father: father overprotection	25.9	6.7	23.1	6.9	6.54*
Father: mother care	36.6	7.9	38.2	6.8	1.72
Father: father care	33.5	8.8	34.9	8.3	1.01
Mother: mother overprotection	26.3	8.0	24.2	6.9	3.84*
Mother: father overprotection	25.7	7.1	23.5	6.0	5.17*
Mother: mother care	36.6	9.4	37.3	8.0	0.31
Mother: father care	34.9	9.5	36.2	7.7	1.13
Parental marital adjustment					
Father report	15.2	8.3	14.6	12.9	0.12
Mother report	16.5	10.9	16.1	13.3	0.05

* p<.05, ** p<.01

Table 7.2 Bivariate Correlations between Potential Predictor Variables and Residual Gain Scores (RGS) of Child Anxiety at Post-treatment and at One-year Follow-up

	RGS at post-treatment	RGS at one year follow-up
Parental psychopathology		
Father: phobic fear and avoidance	-.24*	-.10
Father: anxious / depressed mood	.04	-.04
Mother: phobic fear and avoidance	-.06	-.03
Mother: anxious / depressed mood	.21*	-.00
Perceived parental rearing style (current)		
Child: mother overprotection	.15	.06
Child: father overprotection	-.07	-.12
Child: mother care	.18	.16
Child: father care	-.02	-.08
Perceived parental rearing style of parents in their own childhood		
Father: mother overprotection	.22*	.09
Father: father overprotection	.08	.05
Father: mother care	-.26**	-.14
Father: father care	-.20	-.06
Mother: mother overprotection	.08	.13
Mother: father overprotection	-.04	-.01
Mother: mother care	-.09	-.04
Mother: father care	-.07	-.03
Parental marital maladjustment		
Father report	-.08	-.08
Mother report	.23*	.16

*p<.10, **p<.05, ***p<.003 (bonferroni correction)

Construction of predictor variables

Only the variables that correlated significantly (alpha at <.10) with the RGS were included in the construction of predictor variables. Hence, variables on child reported care or overprotection, or mother reported retrospective care and overprotection were excluded from the analyses as from this point.

Factor analyses (PCA) on the four variables of father reported paternal and maternal warmth and overprotection during his upbringing revealed one factor, explaining 63% of the variance, with all variables loading highly on the new factor. A new variable 'affectionless control of father's childhood' was construed, combining memories of his father and mother with regard to care and overprotection.

With regard to parental psychopathology, factor analysis on maternal and paternal phobic anxiety and anxious / depressed mood revealed two factors, explaining 38% and 27% of the variance respectively. The first factor was parental anxious and depressed mood, and the second parental phobic anxiety.

Factor analysis on mother and father reported marital adjustment revealed one factor, explaining 79% of the variance. This factor was called parental marital adjustment.

This procedure lead to four predictor variables, and their intercorrelations are displayed in table 7.3.

Table 7.3. Intercorrelations of Predictor Variables

	Parental fear and avoidance	Parental anxious / depressed mood	Father reported retrospective affectionless control	Marital maladjustment
Parental phobic fear and avoidance	1			
Parental anxious / depressed mood	.20	1		
Father reported affectionless control	-.11	.16	1	
Marital maladjustment	.39**	.26*	.24*	1

*p<.05, **p<.01

Predictors of treatment outcome: residual gain scores

Table 7.4 displays the bivariate correlations between the constructed predictor variables and the RGS. Only father's memories of affectionless control were significantly related to post-treatment outcome: more affectionless control lead to less improvement for the child. None of the measures were related to one-year follow-up treatment gains.

Table 7.4. Bivariate Correlations between the Constructed Predictor Variables and the Residual Gain Scores (RGS)

	Post-treatment RGS	One year follow-up RGS
Parental fear and avoidance	-.16	-.09
Parental anxiety and depression	.12	-.05
Child reported affectionless control	-.12	-.12
Father reported affectionless control	.23*	.11
Marital maladjustment	.12	.10

*p<.05

Regression analysis
The following variables were thus selected for entering the regression analysis: father's memories of affectionless control in his childhood, parental phobic anxiety, parental anxious / depressive mood, and marital adjustment. Regression analyses revealed that the variables had no predictive value: the regression equations were non-significant, both at post-treatment ($F(1,57)=1.54$, $p<.20$) and at follow-up ($F(1,56)=0.55$ $p<.70$). The values for R square were respectively 0.10 (adjusted R square = 0.035) and 0.038 (adjusted R square = -0.032). Note that N is lower in these analyses, due to missing data as a consequence of single parents (e.g. no data on marital adjustment).

Differential treatment effects: residual gain scores
The differential treatment effects were studied by two regression analyses, with treatment condition forced to enter first in the equation. None of the regression equations was significant at alpha <.05. With regard to post-treatment, the R square value was 0.042 (R= 0.21, adjusted R square = 0.026; $F(1,57)= 2.57$, $p<.11$). In relation to the treatment gains at one-year follow-up, R square was 0.025 (R=0.16, adjusted R square = 0.009, $F(1,56)= 1.51$, $p<.22$).

Differential effect of predictor variables with regard to age and gender
To evaluate gender and age effects, correlations were calculated between the RGSs and the predictor variables in four separate groups: boys, girls, younger children (7-11) and older children (12-17). Over all four groups, only one of the correlations between RGSs and predictor variables (father's memories of affectionless control in his childhood, parental phobic anxiety, parental anxious / depressive mood, and marital adjustment) was significant: for younger children, there was a significant correlation between father's memories of affectionless control and treatment gains at post-treatment ($r=.33$, $p<.05$).

Discussion

This paper focussed on the role of different familial aspects on anxiety disorders in children, namely parental phobic anxiety, parental anxious / depressed mood, current rearing style, parental memories of their upbringing, and parental marital adjustment. We investigated if these familial characteristics were different for anxiety-disordered children as compared to normal children, and whether these factors had impact on treatment outcome of cognitive behavioural therapy.

Parental psychopathology
With regard to parental psychopathology, the findings in this study were inconclusive: fathers of anxiety disordered children were higher on phobic anxiety, but not different on anxious / depressed mood, whereas mothers of anxiety disordered children reported higher levels of anxious / depressed mood, but not of phobic anxiety. Investigating the predictive value of parental psychopathology also led to inconclusive findings. With regard to diagnostic status, there were no differences in pre-treatment parental phobic anxiety or

anxious / depressed mood between children with and without anxiety disorder diagnosis, neither at post-treatment nor at follow-up. In the prediction of treatment gains, there were two non-significant trends: maternal levels of anxious / depressed mood were associated with poorer outcome at post-treatment and, in contrast, paternal symptoms of phobic anxiety predicted better treatment outcome for the children. At one-year follow-up, there were neither relationships nor trends revealing any predictive value of parental phobic anxiety or anxious / depressed mood. It is difficult to explain the contradictory findings of this study, especially the moderate negative effect of the mother's mood and the moderate positive effect of the father's phobic anxiety. In current Dutch households mothers still play the major role in the upbringing, spending most time with the children. Mother's anxious or depressed mood may well have an impact on the child's opportunity to benefit from treatment. The results also suggest that having a father that reports symptoms of phobic anxiety may slightly enhance treatment effectiveness. Perhaps, a father that recognises and acknowledges the fears of the children is helpful in overcoming anxiety for the children. These suggestions are highly hypothetical, and more research is needed to study the specific influence of mothers and fathers on their children's treatment gains.

Parental rearing

The second familial factor studied was parental rearing. In line with previous findings (see Rapee, 1997), anxious children reported higher levels of overprotection than normal children did, but there were no differences in experienced care from their parents. This was the first study that also examined the upbringing that the parents themselves had experienced. Interestingly, both parents retrospectively also reported higher levels of overprotection, but not lower levels of experienced care. This pattern is different from the pattern that adults with anxiety disorders report retrospectively, namely high overprotection and low care, also known as affectionless control (Gerlsma et al., 1990). These data suggest that overprotection plays a more important role in the aetiology of anxiety disorders than experienced warmth. As for the predictive value of parental rearing, no differences were found in perceived parental rearing style between children with and without diagnosis at post-treatment or at follow-up. The child's perception of current rearing style was also not related to treatment gains. So, even though the anxious child did perceive more parental overprotection than normal controls, this overprotection was not predictive of treatment outcome. This is an important finding that may indicate that the overprotection that was experienced was adaptive parental behaviour towards the anxiety-disordered child rather than parental behaviour that was causal of the onset or maintenance of the anxiety disorder. With regard to retrospective reports of the parents, residual gain score analysis revealed that poorer outcome was related to father-reported retrospective levels of maternal overprotection and lack of warmth, and not to retrospective mother reports. At one-year follow-up, none of the variables related to parental rearing style had any predictive value.

Marital adjustment

Finally, parents of anxiety-disordered children did not differ from normal controls on

marital adjustment. So, even though one may argue that marital maladjustment leads to anxiety in children, or that having an anxiety disordered child causes strain in a marital relationship, we did not find any empirical evidence for such suggestions. This is in line with findings in adult literature, namely that marital relationships of female adults with agoraphobia do not differ from normal controls (Arrindell & Emmelkamp, 1986). Parents of children with or without anxiety disorder diagnosis did not differ on levels of marital adjustment at either post-treatment or follow-up. There was a trend that mother reported marital maladjustment was associated with poorer treatment gains at post-treatment but not at follow-up, and no relationship was found for paternal reported marital adjustment and child treatment gains.

No differential effect for parent training

Contrary to our expectations, we found no differential effect with regard to parental involvement and pre-treatment level of parental anxiety or depression, marital maladjustment, or parental rearing practices. These findings were consistent over time (at post treatment as well as at follow-up). Hence, none of the familial characteristics was more or less predictive of successful outcome when treatment condition was accounted for. This is contrary to the findings of Cobham et al. (1998), who did find an interaction effect between parental anxiety and treatment condition at post-treatment. This effect was, however, not consistent over measures and no longer present at one-year follow-up.

Total model

Finally, we tried to establish the predictive value of all variables together (parental anxiety or depression, marital maladjustment of parental rearing practices) by conducting regression analyses with regard to post-treatment and follow-up gains. None of the regression analyses was significant, indicating that the variables together could not satisfactory explain the differences in treatment gains. Thus, even though some relationships and trends were found between treatment gains and familial characteristics, these relations together were not powerful enough to make a significant contribution to explain the difference in treatment outcome. Part of the reason of this finding is the multicollinearity of the data: some variables were correlated higher with each other than with the residual gain scores. The second reason is that the relationships were quite weak to start with.

Discussion of results in the light of previous literature

The results of this study add to the results of four earlier studies on this topic, and so far, conclusions on the role of the family in predicting treatment outcome are inconclusive. One of the reasons for the conflicting results of this study and other studies is the variety in the methodology used. Of four studies that investigated familial predictors of treatment outcome for anxious children, two studies did not control for pre-treatment level of anxiety. Toren et al. (2000) tested whether children of mothers with or without anxiety disorder were different in anxiety and depression levels at post-treatment and at follow-up. Crawford et al. (2001) analysed correlations between predictor variables and levels of the child's anxiety at post-treatment. Both procedures allow for the evaluation of post-treatment scores but not

of treatment gains. Since post-treatment scores are dependent on pre-treatment levels of anxiety, the results may reflect just that the predictor variables are related to the child's level of anxiety (at any point in time), but not necessarily to treatment gains (see Steketee & Chambless, 1992). The third and fourth study (Berman et al., 2000; Cobham et al., 1998) did control for pre-treatment symptoms severity and thus provided better insight in the actual treatment gains, rather than just post-treatment scores. Our study was the first to use the more advances method of residual gain scores, as recommended by Steketee et al. (1992). Second, the studies differed on the number of assessments. Two studies (Berman et al., 2000; Crawford et al., 2001) involved post-treatment data only, whereas the other two studies (Toren et al., 2000; Cobham et al., 1998) included follow-up data as well. Different variables may be predictive of treatment gains at different points in time, and effects on both short-term and long-term outcome are important to investigate. For instance, our study did reveal some trends with regard to post-treatment, but the follow-up data had no relationship with the predictor variables at all. These findings are in line with Cobham et al. (1998), who found clear post-treatment effects, but no effects at one-year follow-up.

Limitations

A number of limitations of this study should be noted. First, the questionnaire that measured the child's perception of parental rearing style was newly developed, and the reliability coefficients were not very high with regard to the 'overprotection' factor (0.64 and 0.66 for fathers and mothers respectively). Coefficients of 0.70 or higher are recommended for research purposes (Nunnally, 1978). The operationalisation of the concept of overprotection as currently perceived by children and adolescents needs more careful elaboration in order to improve reliability. The questionnaire may also need an adaptation for age.

A second limitation of this study is that parental characteristics were only collected at pre-treatment. It would have been interesting to collect these data also at post-treatment and at follow-up. This would allow us to investigate the eventual changes after treatment in parental fear or mood, parental rearing style, or marital adjustment. For instance, Cobham et al. (1998) reported that parents showed lower levels of anxiety after treatment. Second, we could evaluate these scores relative to normal controls, and see if these familial characteristics become more adaptive or more deviant over time. Third, and clinically most important, the effects of post-treatment familial characteristics on long-term follow-up could be studied. It could well be the case that the post-treatment scores of parental phobic anxiety or mood, parental rearing style, or marital adjustment are more predictive of outcome at follow-up than their pre-treatment scores.

Conclusions

In conclusion, the bad news from this study is that we cannot predict very well which child will benefit from CBT and which child may not, on the basis of familial characteristics. Also, we cannot say what parents will need an extra parent training program. The good news is that none of the children have to be excluded from CBT based on clinical impressions of their parental psychopathology, parental rearing style, or the marital maladjustment.

Chapter 8

Conclusions and implications for further research

Introduction

At the time we started this study, relatively little attention had been paid to anxiety disorders in children. The available self-report questionnaires were very general, and did not connect well with clinical practice. With regard to treatment, Kendall was the only one to have published a protocollised treatment manual for children with various anxiety disorders (Kendall et al., 1990), and was the only one who had published results on a randomised waitlist controlled trial (Kendall, 1994). By now, quite a few years later, several new questionnaires have come out and were thoroughly studied, as well as many randomised clinical trials (RCTs) on cognitive behavioural therapy (CBT) outcome from different centres throughout the world. In the review of chapter 1 in the current thesis, as many as 22 randomised controlled trials could now be included. In addition, a great deal of research has been done on other aspects of anxiety disorders in children, such as aetiology. In this chapter, the main results of the current thesis will be summarized, and future directions for research will be proposed. Three areas will be addressed: assessment for anxiety (disorders) in children, CBT outcome, and predictors of CBT outcome.

Assessment of childhood anxiety

Current findings on assessment of childhood anxiety

Chapter 2 and 3 were dedicated to the development and evaluation of a child self-report questionnaire Spence Children's Anxiety Scale (SCAS; Spence, 1998) and a parent-report questionnaire (SCAS-p) on the child's anxiety symptoms. We had the opportunity to evaluate both questionnaires in large samples of clinical and community children. The original SCAS was developed in a large community sample and evidence was found for six intercorrelated factors, which corresponded with the classification of anxiety disorders by DSM-IV (namely Separation anxiety, Generalized anxiety, Social phobia, Panic / agoraphobia, Obsessive compulsive disorder, and Fear of physical injuries). This factor structure was confirmed in a clinical sample with anxious children (chapter 2) and in a parent measure (chapter 3). Also, a higher-order model was tested, in which the variance between the factors was explained by one latent higher-order factor (conceivably general or trait anxiety). However, this factor completely overlapped with the factor of Generalised anxiety and led to estimation errors in the model. Therefore, the model with six intercorrelated factors was preferred over the model with the higher-order factor. Internal consistencies were satisfactory to excellent for all scales, with the Physical injuries fears subscale showing the lowest reliability. Evidence was found for good convergent and divergent validity of both measures, including relatively high parent-child agreement on anxiety symptoms (around 0.50 in both the clinical and the community sample). The relative strong agreement between parents and children may be due to the formulation of the items in terms of overt behaviour rather than feelings. Both parent and child SCAS total and subscale scores differentiated well between community and clinical groups. Children with a specific disorder had higher scores on that subscale than anxious children without that disorder in their profile. In more stringent analyses, most anxiety disorders could be distinguished within the clinical sample, based on their analogous subscale (SCAS and SCAS-p), namely for Separation anxiety, OCD, and Panic/agoraphobia. Socially phobic children could be distinguished by the SCAS-p but not by SCAS-c, and children with Generalised anxiety disorder could not be identified based on the subscale of Generalised anxiety in either child or parent report. Because the SCAS was developed as a screening instrument and not as a diagnostic tool to replace a clinical interview, these psychometric properties were considered satisfactory.

In all, it was concluded that the SCAS-c and the SCAS-p are promising instruments that can be recommended for diagnostic use in clinical practice as well as for screening purposes in community samples.

Implications of assessment findings

The diagnostic classification of Generalised Anxiety Disorder (GAD) in children

In the evaluation of both the SCAS and the SCAS-p, the factor of Generalised anxiety showed complete overlap with a hypothesised higher order factor of anxiety in general. There are two major implications to this finding, both a practical and a theoretical.

First, these findings may indicate that the SCAS factor of GAD is not really measuring GAD as defined in the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The current items are formulated in a rather general way, and do not seem to tap the exact features of GAD, such as the difficulty to stop worrying. Adding new items to the current GAD-subscale might give a better reflection of the contents of the diagnostic classification. In fact, Chorpita et al. (2000) already made suggestions for such improvement of the scale.

Future research should reinvestigate the overlap between the new GAD factor and the higher order factor. If this overlap remains, there will be even more reason to discuss the controversy with regard to the diagnostic classification of GAD in children or adolescents. There is some empirical evidence that GAD may not be a very specific diagnosis in childhood. The two main criteria for GAD, worry and somatic complaints, are not restricted to children with GAD, but are common in children with other anxiety disorders (Weems et al., 2000) and in nonclinical children (Vasey, Crnic, & Carter, 1994; Muris, Merckelbach, Gadet, & Moulaert, 2000; Silverman, La Greca, & Wasserstein, 1995). Perhaps, as Rapee (1991) suggested, GAD should be considered as a factor of trait anxiety or general anxiety rather than as a separate diagnostic classification. Some evidence underlining this perception is that a majority of children with an anxiety disorder in fact meet criteria of GAD. In the current sample (chapter 2) 358 of 543 (66%) children with an anxiety disorder had GAD either as a primary or a secondary diagnosis. Of 543 anxious children, 196 had a primary diagnosis of GAD. Of these 196 children with primary GAD, only 26 did not meet criteria for another disorder and could be considered as 'pure' GAD. This finding suggests that GAD is not a very specific diagnostic classification, but very common in children with any anxiety disorder. The last piece of evidence stems from the discriminant analyses with the SCAS-c and SCAS-p. Results of ROC analyses on the SCAS-c indicated that the specific SCAS-c subscales showed fair discrimination of their analogous diagnostic categories of Separation Anxiety Disorder (SAD), Panic / Agoraphobia (Pan/Ag), and Obsessive Compulsive Disorder (OCD), but not for Social Phobia (SoPh) or GAD. Based on the SCAS-p reports, it was possible to classify children according to their primary anxiety disorder, at least for children with primary SAD, SoPh, Pan/Ag., and OCD. Children with primary GAD were equally assigned to the SAD or the SoPh category. These results suggest again that the current GAD subscale is not specific to the current GAD classification.

In conclusion, the GAD subscale needs to be elaborated closer to the DSM-IV, and with this new subscale the validity of the diagnostic category of GAD in children needs to be addressed, relative to the hypotheses that (1) GAD-symptoms are symptoms of any anxiety disorder rather than a distinct diagnosis and that (2) GAD reflects a common factor of trait anxiety rather than a separate disorder.

Implications of assessment findings: comorbidity

The huge rate of comorbidity in anxiety disorders, mainly of other anxiety disorders, questions the value of the different anxiety disorder classification categories. In the current clinical sample (chapter 2), children had zero to six comorbid diagnoses, and 426 of 543 (79%) children with a primary anxiety disorder met criteria for another disorder. The secondary diagnoses were most often other anxiety disorders, namely specific phobia (n=174), GAD (n=162), Social phobia (n=128), Separation anxiety disorder (n=99), OCD (n=40), Panic (n=18), and also mood disorders (depression or dysthymia: n=77), externalising disorders (ADHD, Conduct Disorder, or Oppositional Defiant Disorder: n=113). These findings are in line with several other authors, who also report high levels of comorbidity in samples of anxiety-disordered children. Kendall and collaegues (2001), for example, also reported that 79% of children had at least one comorbid disorder. This large proportion of comorbidity may simply reflect the amount of overlapping features and symptoms. Comorbidity may also reflect the severity of the complaints or a general anxiety syndrome (e.g. Kendall et al., 2001), and may suggest that it is useful to emphasis on a general anxiety syndrome rather than on separate classifications.

However, results of factor analyses on both the SCAS and the SCAS-p (chapter 2 and 3) suggested that the model that identified clusters of anxiety symptoms was more adequate than a simple one-factor model, meaning that the separate clusters are meaningful. It is therefore no option to simply return to one single classification category of 'anxiety disorders'.

In the ongoing discussion and the process of the development of a new diagnostic system (DSM-V; meant to appear around 2010), some researchers and experts have suggested adapting the current classification system to a dimensional system. This would acknowledge 'the continuum nature of symptoms. In particular, it may be helpful to find ways to denote a distinction between mild and borderline cases and clear-cut or severe cases' (quote from the Research Agenda for DSM-V, American Psychiatric Association, 2002). Advantages of a more dimensional framework are that patients do not have to fit exact prescribed stereotypes, and that the profile of patients who meet criteria for various disorders, or who are in between two categories, can be portrayed more accurately. The disadvantages of dimensional framework, however, are that in clinical practice it may be hard to assign the right treatment or to have insight in the aetiology of a series of dimensional entities rather than a category (Rounsaville et al., 2002).

In all, this thesis has provided evidence that the DSM-IV clusters of anxiety are meaningful, but has also indicated some possible weaknesses of the dichotomous nature of DSM for childhood anxiety disorders. A dimensional framework rather than a dichotomous classification system may be a useful adaptation of the current DSM-IV.

Implications of assessment findings: functional impairment

Results of discriminant analyses with the SCAS parent-report showed that the SCAS-p was not capable of exactly distinguishing between anxiety disordered and community children. 14% of anxiety-disordered children were classified as community children based on parental reports. The lack of the criterion of functional impairment with regard to the items may be the source of this finding.

The severity of a disorder can be reflected in terms of functional impairment. In today's DSM-IV, axis V of DSM is dedicated to this topic, describing the level of functioning of an individual. In addition, one of the DSM-IV criteria for a disorder is that the symptoms lead to significant interference in daily life. Functional impairment is an important issue with regard to the assessment of anxiety disorders. In assessing childhood anxiety disorders, the level of interference is included in most diagnostic interviews (e.g. the ADIS C/P; Albano et al., 1994). However, most questionnaires fail to inquire about the level of interference or impairment, but rather for the frequency of occurrence of symptoms. In this way, a high frequency or a multitude of different symptoms leads to a higher rating on the scale. However, a child may also be seriously impaired by only a few symptoms. In the analyses with the SCAS self-report and parent-report, this effect may have lead to some clinical children scoring below the clinical range of anxiety disorders (see chapter 2 and 3). Impairment or interference in daily functioning should be included in questionnaires as an important determinant of the level of anxiety.

The effectiveness of CBT for anxiety disorders in children

Current findings

In chapter 4 and 5, two outcome studies on the effects of CBT were described. The first study included 18 children and the second study 79 children. Results were positive: children with anxiety disorders benefited from a 12 session CBT-program in terms of a reduction of symptoms of anxiety and depression. These results were equal for referred and recruited children. The active treatment condition was more effective than the waitlist control condition in parent measures and with regard to diagnostic status, but not in child self-reports. A 7-session cognitive parent-training program failed to add to the effectiveness of this individual program.

Implications of current findings on CBT

The following themes of implications will be highlighted in the next paragraphs: treatment effectiveness in clinical practice and in research settings, the process of change, parental involvement, outcome measures, and pharmacological treatment.

Implications of current findings on CBT: treatment effectiveness in clinical practice and in research settings

In a meta-analysis on the effect size of psychotherapy in children, a large difference in effect size between clinical settings and research clinics has been reported. This finding brings up questions on how to bridge the gap between the lab and the clinics. Weisz (1998) put forward the differences between the labs and the clinics that may account for this large difference in effect size. The differences can be divided into two domains: differences in the sample characteristics and differences in treatment and therapists.

Children in research settings and regular clinics may differ in the following ways: research studies may impose exclusion criteria, for instance excluding children with comorbid

disorders. Children in clinics, however, often meet criteria for multiple disorders. Children in research centres are mostly recruited through media or schools, whereas children in regular clinics are referred by GP's. Recruited children may therefore have less symptomatology or less functional impairment.

In the treatment / therapist domain, the following differences may be present: treatments in research clinics are often focused on one problem rather than 'multiproblem', they are often behavioural rather than non-behavioural. In addition, therapists in clinical practice often experience more pressure on production and have relatively little time for extra training into treatment manuals or intervision.

The present study included mostly referred children. A majority of children in the current study failed to meet any criteria for an anxiety disorder at post-treatment (57%), three months follow-up (69%), and twelve months follow-up (63%). These percentages seem to be somewhat lower than reported by Kendall (1994) and Barrett et al. (1996), who reported percentages around 70 or 80%, both at posttreatment and long term follow-ups. One may want to conclude that the intervention was not as successful in clinical practice as in the research settings. However, this disparity is probably an artefact since those studies have reported the percentage of children that have recovered from their original primary anxiety diagnosis, and not necessarily from any anxiety disorder. In this study, these percentages of children recovered from their original primary diagnosis were respectively 70% (post), 78% (three months), and 77% (twelve months). Since we know from prevalence studies that the specific primary anxiety disorder in children is not stable over time (Costello et al., 2003), percentages of full recovery need to be reported in future studies.

The present study included children that were referred as well as children that were recruited. Although exclusion criteria were very broad, there was no difference between the children in terms of symptom severity or comorbidity. Southam-Gerow, Weisz, and Kendall (2003) also found that youth from research centres did not differ from youth in clinical practice in terms of internalising symptoms and diagnoses. However, contrary to our findings, they did find that children in clinical practice showed more comorbid externalising diagnoses and externalising problems, and were more likely to come from low-income and single-parent families. In our study, both groups benefited equally from CBT, which is encouraging for the implementation of research protocols in clinical practice. So, the gap between the lab and the clinics does not seem to derive from child characteristics. Weisz et al. (1995) argued that most of the difference in effectiveness seems to come from the fact that research settings mostly provide treatments that are behavioural and directive, very structured, focused on one problem, and very specific with a clear rationale. These features seem to enhance treatment effectiveness largely, and are not too difficult to implement in clinical practice. Training therapists to adhere more strictly to protocollised manuals might enhance treatment effectiveness in clinical settings. In addition, there may be a large effect of the procedure characteristic for research, such as the standardised measurement, the signing of the informed consent, and the enthusiasm of the researcher and test-assistents. These factors may influence both the patients and the therapists.

Implications of current findings on CBT: pathways to change

Given the impressive amount of controlled trials that have now been published with positive outcome results, it is time to investigate the contents of the treatment program and the processes through which changes occur more in depth. The current programs for CBT often include a variety of techniques and interventions and, to date, little is known on the specific treatment ingredients that lead to stable changes. Most studies conducted so far, including the present study, had a waitlist group as a control condition, whereas Last et al. (1998), Silverman et al. (1999b), Beidel et al. (2000) included an attention placebo condition. Only in the Beidel et al. (2000), CBT was more effective than the attention placebo condition. Silverman et al. (1999b) provided an educational support program, without explicitly encouraging children to practice in anxiety provoking situations. These findings pose new challenges in the field of treatment outcome for anxiety-disordered children. With regard to the specific CBT procedures, Silverman et al., (1999b) investigated the difference in effectiveness between exposure + contingency management versus exposure + self control procedures (cognitive interventions) and found no difference between the two. (Prins & Ollendick, 2003) underlined the need for further investigation of the role of cognitive change and enhanced coping in relation to the effectiveness of CBT. At this moment, it is hard to draw conclusions on the pathways to change. Future research may focus on this process of change, for instance by collecting data on relevant variables (such as anxiety, behaviour, cognitions, coping) on more occasions (e.g. every session) than just the pre-treatment and post-treatment. These data on the process of change could lead to better insight into the pathway of change, and may even gain insight into the 'pathway of failure': how does the process of change differ between children that benefit from treatment and children that do not. In addition to examining these pathways to change in the child's anxiety, the place of familial characteristics in these pathways should be studied. If we know more of the process of change during therapy, a more detailed investigation of the connection between these specific parameters and family variables is feasible. For instance, Mendlowitz et al. (1999) reported that additional parent training positively affected the child's active coping, but not the anxiety symptoms. Future research should thus include variables on parental characteristics at all assessments, also during the course of treatment. Another line of research into the process of change may be to include another type of variables into the studies. So far, only explicit measures, such as self-reported and parent-reported anxiety, have been included in outcome trials. Today, we know that self-reported explicit attitudes do not fully correspond to implicit attitudes. (Wilson, Lindsey, & Schooler, 2003) have defined the so-called dual attitudes hypothesis: attitudes at the automatic, implicit level can differ from reported, explicit attitudes. For instance, one may explicitly report that one is not scared, even though there are phobic associations on a implicit level (see de Jong, van den Hout, Rietbroek, & Huijding, 2003). There are also some indications that implicit and explicit measures react differently to change: explicit measures seem to be much more susceptible to change than implicit measures (e.g. Wilson et al., 2003). These researchers have found evidence that 'old' attitudes are not simply replaced by new attitudes, but they emerge next to and coexist with the old attitude. The old attitude may still be active long after the new attitude has been established, and may remain

influential on the person's thoughts and actions. If, indeed, implicit measures are also more robust to therapeutic change, they may form a serious criterion for continuation of treatment. Perhaps, children will need treatment until new implicit attitudes have emerged that are stronger than the old dysfunctional attitudes. Implicit measures may shine another light on the process of change in the course of treatment and during the period after treatment.
In conclusion, future research should study the process of change more in depth, including variables of the child and parents, on both explicit and implicit measures.

Implications of current findings on CBT: parent involvement
In the present studies (chapter 4 and 5), the addition of the Cognitive Parent Training Program did not lead to more reduction of child anxiety symptoms than the individual CBT child program alone. These findings seem to be in line with adult literature in which the involvement of spouses as a co-therapist did not add to the effects of CBT in treating patients with agoraphobia (e.g. Gerlsma & Emmelkamp, 1994). There are some indications that parental involvement may, indeed, not add to the benefits of individual child treatment. Even though various studies have reported an additional value of parental involvement, a detailed observation of the reported results reveals that the results are not robust across measures or across moment of assessment (post treatment or follow-up). For instance, Mendlowitz et al. (1999) reported only superiority of a child + parent condition with regard to active coping of the child, and not with regard of primary outcome measures such as anxiety or depression symptoms. And even though Barrett et al. (1996) reported better treatment outcome for children with parental involvement, this effect had faded at long term follow-up (Barrett et al., 2001). Preliminary results of a multi-centre study in the Netherlands, comparing an individual treatment program with a family treatment program, failed to show superiority of the family program at post test (Bodden et al., 2004). In fact, the individual program was more effective with regard to some outcome variables, namely parent reports on child anxiety diagnoses and interference by the anxiety disorder. These findings strongly support the current finding that the additional Cognitive Parent Training was unrelated to treatment benefits. Various explanations for the findings include the following:
The parents in the individual CBT condition did receive a lot of 'indirect training'. Even before starting the treatment program, all parents and children were informed about CBT and signed the informed consents in which the principles of CBT were shortly explained. During treatment, all parents had two sessions with the child therapist. The explanations of the therapist during the two parent sessions (including the rationale for the treatment and an investigation of anxiety provoking situations for the exposure hierarchy), the clear rationale and exercises in the child's workbook, and the child's daily exercises in handling anxiety may have changed parental thoughts and behaviour with regard to anxiety management. The new child behaviour may even have provoked new parental thoughts and behaviour that were more adaptive and helpful to the child. These interventions may have contributed to an upward spiral in both treatment conditions. This hypothesis suggests that psycho education on anxiety management and modelling towards the parents may

form strong and sufficient interventions next to individual child CBT.
Another hypothesis for the lack of finding any additional effect of the parent-training program may be that the parents in the parent training condition received more responsibility for the treatment success of their child. Parents in the child only condition could leave the responsibility with the therapist. Parents of anxiety disordered children have been found to be less granting of autonomy (Siqueland et al., 1996). The intervention of a unique focus on the capacities of the child without parental involvement may have had beneficial impact to the children in terms of autonomy.
The lack of finding any additional effect of the parent-training program may also have been the result of the contents of this specific program. Perhaps, the parents did not have maladaptive cognitions or behaviour to start with. However, this seems unlikely, since there is quite some evidence that parents of anxiety disordered children at least differ in the extent to which they grant psychological autonomy (Siqueland et al., 1996) and, in child-reports, in control and overprotection (Rapee, 1997). This issue was addressed as 'parental rearing style' in chapter 1 of the current thesis.
A second possibility is that the program was not effective in changing parental cognitions or (third possibility) parental behaviour. The program may have been too short, and the focus on cognitions may have been too difficult for some of the parents. A longer, more behaviourally-oriented program may have had a better effect, or a program focused on parent anxiety management (such as in the study by Cobham et al. (1998)). The fourth explanation could be that even though parents changed through participation in the program, they were not able to help their children better than the parents who did not receive the program. The program may have strictly benefited the parents, without contributing to the reduction of child anxiety symptoms.
In future studies, measures on parental cognitions and behaviour towards anxious child behaviour should be added to the outcome measures, so that the exact effects of such parent training program can be monitored. A new multi-centre study that is conducted in the Netherlands at this time (Bodden et al., 2004) in fact includes a video task investigating parent-child interactions in a discussion task and a Parental Beliefs Questionnaire (PBQ , Nauta, Bögels, & Siqueland, 2002) that taps domains of possible parental maladaptive cognitions, such as catastrofising, overidentification, and powerlessness. These variables may serve as a measure of treatment outcome, of the process of change, and of predictors of outcome. Previous research in ADHD has shown that parental cognitions can be predictive of treatment outcome (Hoza et al., 2000).
So, by monitoring more precisely what measures change at what time during the course of treatment, it will be possible to draw conclusions on what changes are in fact responsible for the child's reduction in symptoms.

Implications of CBT findings: Outcome measures
A last comment regards the outcome measures. Even though the CPT may not have had any additional effect on child anxiety symptoms, it may have had other beneficiary effects that were not measured. Parents may have felt better, or experienced less stress or anxiety, without necessarily having impact on the child's anxiety symptoms, but in other important

domains of personal or family life. Also, parents may have learnt skills that they can apply to themselves or to siblings of the child (Bögels & Boer, 2002). Since we know that anxiety disorders tend to be familial, this may be a very useful side effect that should be included in future research.
In most studies, including the current studies, positive treatment outcome is defined by the absence of an anxiety disorder diagnosis and by a reduction of anxiety symptoms. These are, of course, very important parameters, since the families come for help for the child's anxiety problems. However, it may be useful to include other outcome measures in future research, such as measures of adaptive functioning, e.g., the quality of social life and functioning at school, or indicators of happiness rather than mental problems. These parameters may also be good predictors of treatment outcome, especially at post-treatment with regard to longer term functioning. Children that function well after treatment in the areas of school performance, peer relationships, and family relationships at post treatment may do better in the long-term, since they will have more positive experiences, for instance with regard to social development. They may develop better than children who experience less anxiety symptoms after treatment, but are not (yet) well embedded in a good social network. A suitable measure for this purpose may be the Child and Adolescent Social and Adaptive Functioning Scale (CASAFS; Price, Spence, Sheffield, & Donovan, 2002).

Predictors of CBT outcome

Current findings with regard to predictors of treatment outcome
So far, relatively little research focussed on predicting treatment outcome for anxiety disordered children. Chapter 6 and 7 summarise the literature on this topic with regard to child characteristics and family characteristics, and a variety of predictors are included to predict post treatment diagnostic status (about 2/3 of children diagnosis free versus 1/3 of children still meeting for criteria of an anxiety disorder after treatment) or treatment gains (the reduction of anxiety symptoms). Child characteristics included demographics (age and gender), specific primary diagnosis, symptom severity, comorbidity (symptoms of depression, externalising behaviour, and PDDNOS), duration of complaints, prior treatment, attachment style, and intelligence. Family characteristics included parental phobic fear and avoidance, parental anxious / depressed mood, parental rearing style, and parental marital adjustment. Contrary to our expectations, there was no predictive value for any of the parental characteristics. Also, there was no interaction effect with treatment condition. In contrast, child characteristics were relatively strong predictors of both diagnostic status and treatment gains, both at post treatment as well as at one-year follow-up. The strongest predictors of diagnostic status were prior treatment, pre-treatment comorbidity (depressive symptoms and number of comorbid diagnoses), and intelligence. Treatment gains were best predicted by duration of complaints, pre-treatment internalising symptoms, and intelligence, with duration of complaints being the strongest predictor. Long-term treatment failure was predicted from post-treatment comorbidity, severity and impairment, and none of the post-treatment variables were associated with treatment gains

between post-test and one year follow-up. Additional parent training had no interaction effect with any of the variables and treatment outcome. Comorbidity at pre-treatment and at post treatment were strong predictors of long-term diagnostic status.

Implications of current predictor findings

In this section, implications of both parental and child characteristics will be highlighted. Also, some implications with regard to functional impairment will be described.

Implications of predictor findings: parental characteristics

The main clinical implication is that parental factors do not need to be decisive in including children in individual CBT programs. Even if parents may suffer from symptoms of anxiety or depressed mood, or if parents reports lower levels of marital adjustment, or higher levels of overprotection, there is no reason to deny their children an individual treatment program, or to add a 7-session cognitive parent-training program.

Implications of predictor findings: child characteristics

Pre-treatment externalising symptoms and symptoms of PDDNOS were not related to treatment outcome. This finding suggests that children can be treated for their anxiety disorder despite other mental problems.

Some other child related variables were, in contrast, strongly related to both treatment failure and treatment gains. Duration of complaints, severity of symptoms, comorbidity, and lower intelligence were pre-treatment factors that were associated with treatment failure or fewer treatment gains. Duration of complaints emerged as the strongest predictors of treatment gains. Also, post-treatment severity of anxiety symptoms, impairment, and comorbidity were strong predictors of long-term follow-up diagnosis. These findings lead to the conclusion that there is a group of children that responds less to 12 sessions of CBT: the children with more symptoms of anxiety, depression, or OCD before treatment and also directly after 12 sessions of CBT, and children of lower intelligence. The large role for intelligence is remarkable (certainly given the inclusion criterion of IQ >80) and has not been reported elsewhere. The treatment protocol could be refined for children with lower intelligence, by putting more emphasis on exposure exercises and not so much on cognitive skills training. Also, parents may need very specific operant techniques in order to work with their children. The exact consequence of the findings with regard to child symptomatology remains unclear. Do these children need additional treatment to start with? Or do these children need more than 12 sessions of CBT to recover from their mental problems? Or are they perhaps in need of pharmacotherapy? For most adult anxiety disorders, pharmacotherapy with an SSRI is recommended for people with higher symptomatology or comorbid depression. However, the empirical evidence for the prescription of SSRIs in children is still under a lot of discussion and deserves further research. As long as no other evidence-based treatment is available, we would suggest to start with CBT, and keep good track of the children that report symptoms of anxiety, depression, or OCD at post-treatment. Future research should investigate what treatment is the best for those children who fail to benefit from 12 sessions CBT.

Implications of predictor findings: Functional impairment

With regard to treatment, functional impairment because of the disorder (axis V) and the impact of the child's problem on the family (axis IV) were described as better predictors of seeking treatment than the diagnosis (axis I) itself (see Pine et al., 2002). In children, this issue of seeking help is complicated by the fact that parents are most often the source of referral, so parents must notice some level of impairment, either in the child or in their own life. If functional impairment is detrimental to seeking help, it should also be a main outcome measure, next to the diagnosis. Pelham and Fabiano (2001) argue that clinicians should focus on the impairment by a disorder, and implement treatment related to the impairment rather than to the specific diagnosis. These authors argue that the application of behaviour modification in these areas of impairment will lead to changes across diagnostic categories. In the current thesis, impairment by the disorder emerged as an important predictor of long-term follow-up (chapter 4 and 5). Therefore, functional impairment deserves a more central role in future research.

Finally

The field of anxiety disorders in children has largely developed during the period in which this study was conducted. This study has contributed to this development in terms of knowledge on assessment, treatment in clinical practice, parental involvement, and predictors of treatment outcome. Some broad research questions have been answered and can now be abandoned, and new, more specific research questions can now be addressed. We no longer ask 'is it useful to examine different clusters of anxiety symptoms in children?', but we can start looking for refinement of basically good instruments for both parents and children. The question 'does CBT work for anxious children' can now be abandoned and we can enter new, more specific questions such as 'what ingredients of CBT work for children' or 'what process leads to change in CBT for children'. Future studies will hopefully provide answers to such questions, and benefit to the development of theory of anxiety disorders and to the children, parents, and therapists in clinical practice.

References

Abbott, M. J., Gaston, J., & Rapee, R. M. (2002). *Bibliotherapy in the treatment of children with anxiety disorders*. Paper presented at the 3rd International Child and Adolescent Mental Health Conference, Brisbane: June 11-15.

Achenbach, T. M. (1991). *Integrative Guide for the 1991 CBCL/4-18, YSR, and TRF Profiles*. Burlington, VT: University of Vermont, Department of Psychiatry.

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213-232.

Acock, A. C. (1997). Working with missing values. *Family Science Review, 10*, 76-102.

Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. London: Lawrence Erlbaum.

Albano, A. M. & Silverman, W. K. (1994). *Anxiety Disorders Interview Schedule for DSM-IV, Child version: Clinician Manual*. Albany, NY USA: Graywind Publications.

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (4th edition)*. Washington DC: Author.

American Psychiatric Association (2002). *A research agenda for DSM-V*. Washington DC: Author.

Anderson, J. C. (1994). Epidemiological issues. In T.H.Ollendick, N. J. King, & W. Yule (Eds.), *International Handbook of phobic and anxiety disorders in children and adolescents* (pp. 43-66). New York: Plenum Press.

Anderson, J. C., Williams, S. M., McGee, R., & Silva, P. A. (1987). DSM-III disorders in preadolescent children: Prevalence in a large sample from the general population. *Archives of General Psychiatry, 28*, 842-846.

Arrindell, W. A., Boelens, W., & Lambert, H. (1983). On the psychometric properties of the Maudsley Marital Questionnaire (MMQ): Evaluation of self-ratings in distressed and 'normal' volunteer couples based on the Dutch version. *Personality and Individual Differences, 4*, 293-306.

Arrindell, W. A. & Emmelkamp, P. M. (1986). Marital adjustment, intimacy and needs in female agoraphobics and their partners: A controlled study. *British Journal of Psychiatry, 149*, 592-602.

Bakker, F. C., Van Wieringen, P. C., Van der Ploeg, H. M., & Spielberger, C. D. (1989). *Handleiding bij de Zelf-Beoordelings- Vragenlijst voor Kinderen ZBV-K*. Lisse, the Netherlands: Swets & Zeitlinger.

Barrett, P. M., Dadds, M. R., & Rapee, R. M. (1996). Family treatment of childhood anxiety: A controlled trial. *Journal of Consulting and Clinical Psychology, 64*, 333-342.

Barrett, P. M., Duffy, A. L., Dadds, M. R., & Rapee, R. M. (2001). Cognitive-behavioral treatment of anxiety disorders in children: Long-term (6-year) follow-up. *Journal of Consulting and Clinical Psychology, 69*, 135-141.

Bartholomew, K. & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226-244.

Beidel, D. C., Christ, M. A., & Long, P. J. (1991). Somatic complaints in anxious children. *Journal of Abnormal Child Psychology, 19,* 659-670.

Beidel, D. C., Fink, C. M., & Turner, S. M. (1996). Stability of anxious symptomatology in children. *Journal of Abnormal Child Psychology, 24,* 257-269.

Beidel, D. C. & Turner, S. M. (1997). At risk for anxiety: I. Psychopathology in the offspring of anxious parents. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 918-924.

Beidel, D. C., Turner, S. M., & Morris, T. L. (1999). Psychopathology of childhood social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry, 38,* 643-650.

Beidel, D. C., Turner, S. M., & Morris, T. L. (2000). Behavioral treatment of childhood social phobia. *Journal of Consulting and Clinical Psychology, 68,* 1072-1080.

Berman, S. L., Weems, C. F., Silverman, W. K., & Kurtines, W. K. (2000). Predictors of outcome in exposure-based cognitive and behavioral treatments for phobic and anxiety disorders in children. *Behavior Therapy, 31,* 713-731.

Berney, T., Kolvin, I., Bhate, S. R., Garside, R. F., Jeans, J., Kay, B. et al. (1981). School phobia: a therapeutic trial with clomipramine and short-term outcome. *British Journal of Psychiatry, 138,* 110-118.

Bernstein, G. A., Borchardt, C. M., Perwien, A. R., Crosby, R. D., Kushner, M. G., Thuras, P. D. et al. (2000). Imipramine plus cognitive-behavioral therapy in the treatment of school refusal. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 276-283.

Bernstein, G. A., Garfinkel, B. D., & Borchardt, C. M. (1990). Comparative studies of pharmacotherapy for school refusal. *Journal of the American Academy of Child and Adolescent Psychiatry, 29,* 773-781.

Biederman, J., Hirshfeld-Becker, D. R., Rosenbaum, J. F., Herot, C., Friedman, D., Snidman, N. et al. (2001). Further evidence of association between behavioral inhibition and social anxiety in children. *American Journal of Psychiatry, 158,* 316-326.

Biederman, J., Rosenbaum, J. F., Bolduc-Murphy, E. A., & Faraone, S. V. (1993). A 3-year follow-up of children with and without behavioral inhibition. *Journal of the American Academy of Child and Adolescent Psychiatry, 32,* 814-821.

Birmaher, B., Axelson, D. A., Monk, K., Kalas, C., Clark, D. B., Ehmann, M. et al. (2003). Fluoxetine for the treatment of childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 42,* 415-423.

Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): a replication study. *Journal of the American Academy of Child and Adolescent Psychiatry, 38,* 1230-1236.

Birmaher, B., Waterman, G. C., Ryan, N., Cully, M., Balach, L., Ingram, J. et al. (1994). Fluoxetine for childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 33,* 993-999.

Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J. et al. (1997). The Screen for Child Anxiety Related Emotional Disorders (SCARED): Scale construction and psychometric characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 545-553.

Bodden, D., Bögels, S., Nauta, M., Ringrose, J., Appelboom, C., de Haan, E. et al. (2004). *Gezins- versus kind cognitieve gedragstherapie voor kinderen met angststoornissen.* Presentation at the Symposium of the Multicenter Study in Utrecht, March 27th 2004: Universiteit van Maastricht / EPP / ZonMW.

Bögels, M. & Boer, F. (2002). System therapeutic interventions in children with anxiety disorders / Systeemtherapeutische interventies bij kinderen met angststoornissen. *Kind en Adolescent, 23,* 337-352.

Boer, F., Markus, M.-T., Maingay, R., Lindhout, I.-E., Borst, S.-R., & Hoogendijk, T.-H. (2002). Negative life events of anxiety disordered children: Bad fortune, vulnerability, or reporter bias? *Child Psychiatry and Human Development*, *32*, 187-199.

Boomsma, A. & Hoogland, J. J. (2001). The robustness of LISREL modeling revisited. In R.Cudeck, S. du Toit, & D. Sörbom (Eds.), *Structural equation models: Present and Future. A Festschrift in honor of Karl Jöresköp* (pp. 139-168). Chicago: Scientific Software International.

Bouldin, P. & Pratt, C. (1998). Utilizing parent report to investigate young children's fears: A modification of the Fear Survey Schedule for Children-II: A research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *39*, 271-277.

Bowlby, J. (1969). *Attachment*. New York: Basic.

Bowlby, J. (1973). *Separation*. New York: Basic.

Bowlby, J. (1980). *Loss*. New York: Basic.

Bowlby, J. (1988). *A secure base*. New York: Basic Books.

Brent, D. A., Kolko, D., Birmaher, B., Baugher, M., & Bridge, J. (1999). A clinical trial for adolescent depression: Predictors of additional treatment in the acute and follow-up phases of the trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, *38*, 263-270.

Briggs, S. R. & Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, *54*, 106-147.

Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998). Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of abnormal psychology*, *107*, 179-192.

Browne, M. W. & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research*, *21*, 230-258.

Byrne, B. M. (1989). *A primer of LISREL: Basic applications and programming for confimatory factor analytic models*. New York: Springer-Verlag.

Campbell, M. A. & Rapee, R. M. (1994). The nature of feared outcome representations in children. *Journal of Abnormal Child Psychology*, *22*, 99-111.

Caster, J. B., Inderbitzen, H. M., & Hope, D. (1999). Relationship between youth and parent perceptions of family environment and social anxiety. *Journal of Anxiety Disorders*, *13*, 237-251.

Chambless, D. L. & Steketee, G. (1999). *Predicting treatment outcome for panic disorder and agoraphobia in primary care*. US: John Wiley and Sons.

Chansky, T. E. & Kendall, P. C. (1997). Social expectancies and self-perceptions in anxiety-disordered children. *Journal of Anxiety Disorders*, *11*, 347-363.

Chavira, D. A. & Stein, M. B. (2002). Combined psychoeducation and treatment with selective serotonin reuptake inhibitors for youth with generalized social anxiety disorder. *Journal of Child and Adolescent Psychopharmacology*, *12*, 47-54.

Chorpita, B. F., Yim, L., Moffitt, C., Umemoto, L. A., & Francis, S. E. (2000). Assessment of symptoms of DSM-IV anxiety and depression in children: a revised child anxiety and depression scale. *Behaviour Research and Therapy*, *38*, 855.

Clark, L. A. & Watson, D. (1991). Tripartite model of anxiety and depression: psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, *100*, 316-336.

Cobham, V. E., Dadds, M. R., & Spence, S. H. (1998). The role of parental anxiety in the treatment of childhood anxiety. *Journal of Consulting and Clinical Psychology*, *66*, 893-905.

Cohen, J. (1992). Quantative metohds in psychology: A power primer. *Psychological Bulletin, 112,* 155-159.

Cole, D. A., Hoffman, K., Tram, J. M., & Maxwell, S. E. (2000). Structural differences in parent and child reports of children's symptoms of depression and anxiety. *Psychological Assessment, 12,* 174-195.

Compton, S. N., Grant, P. J., Chrisman, A. K., Gammon, P. J., Brown, V. L., & March, J. S. (2001). Sertraline in children and adolescents with social anxiety disorder: An open trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 564-571.

Costello, A. J., Edelbrock, C. S., Dulcan, M. K., Kalas, R., & Klaric, S. H. (1984). *Development and Testing of the NIMH Diagnostic Interview Schedule for Children in a Clinic Population: Final Report (contract RFP-DB-81-0027).* Rockville, MD: Center for Epidemiologic Studies, NIMH.

Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric diosrders in childhood and adolescence. *Archives of General Psychiatry, 60,* 837-844.

Cowan, P. A., Cohn, D. A., Cowan, C. P., & Pearson, J. L. (1996). Parents' attachment histories and children's externalizing and internalizing behaviors: Exploring family systems models of linkage. *Journal of Consulting and Clinical Psychology, 64,* 53-63.

Crawford, A. M. & Manassis, K. (2001). Familial predictors of treatment outcome in childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 1182-1189.

de Beurs, E. (1993). *The assessment and treatment of panic disorder and agoraphobia.* Amsterdam: Thesis Publishers.

de Jong, P. J., van den Hout, M. A., Rietbroek, H., & Huijding, J. (2003). Dissociations between implicit and explicit attitudes toward phobic stimuli. *Cognition and Emotion, 17,* 521-545.

DiLalla, L. F., Kagan, J., & Reznick, J. S. (1994). Genetic etiology of behavioral inhibition among 2-year-old children. *Infant Behavior and Development, 17,* 405-412.

Edelbrock, C., Rende, R., Plomin, R., & Thompson, L. A. (1995). A twin study of competence and problem behavior in childhood and early adolescence. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 36,* 775-785.

Eisen, A. R. & Silverman, W. K. (1993). Should I relax or change my thoughts? A preliminary examination of cognitive therapy, relaxation training, and their combination with overanxious children. *Journal of Cognitive Psychotherapy, 7,* 265-279.

Eley, T. C. (2001). Contributions of behavioral genetics research: Quantifying genetic, shared environmental and nonshared environmental influences. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety.* (pp. 45-59). London: Oxford University Press.

Eley, T. C. & Stevenson, J. (1999). Exploring the covariation between anxiety and depression symptoms: A genetic analysis of the effects of age and sex. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 40,* 1273-1282.

Emmelkamp, P. M. G., Hoekstra, R. J., & Visser, S. (1985). The behavioral treatment of obsessive-compulsive disorder: Prediction of outcome at 3.5 years follow-up. In P.Pichot, P. Berner, R. Wolf, & K. Thau (Eds.), *Psychiatry: the state of the art* (pp. 265-270). New York: Plenum.

Emmelkamp, P. M. G. & Van der Hout, A. (1983). Failure in treating agoraphobia. In E.B.Foa & P. M. G. Emmelkamp (Eds.), *Failures in behaviour therapy* (pp. 58-81). New York: Whiley & Sons.

Emmelkamp, P. M. G., van Dyck, R., Bitter, M., Heins, R., Onstein, E. J., & Eisen, B. (1992). Spouse-aided therapy with agoraphobics. *British Journal of Psychiatry, 160,* 51-56.

Endler, S. E. & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders, 15,* 231-245.

Erickson, F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. *Monographs of the society of research in child development*, *50*, 147-166.

Essau, C. A., Conradt, J., & Petermann, F. (2000). Frequency, comorbidity, and psychosocial impairment of anxiety disorders in German adolescents. *Journal of Anxiety Disorders*, *14*, 263-279.

Ferdinand, R. & van der Ende, J. (2000). Nederlandse versie van de DISC-IV (Diagnostic Diagnostic Interview Schedule for Children).

Fergusson, D. M., Horwood, L. J., & Lynskey, M. T. (1993). Prevalence and comorbidity of DSM-III—R diagnoses in a birth cohort of 15 year olds. *Journal of the American Academy of Child and Adolescent Psychiatry*, *32*, 11270f-1134.

Flannery-Schroeder, E. C. & Kendall, P. C. (2000). Group and individual cognitive-behavioral treatments for youth with anxiety disorders: A randomized clinical trial. *Cognitive Therapy and Research*, *24*, 251-278.

Gallagher, H. M., Rabian, B. A., & McCloskey, M. S. (2004). A brief group cognitive behavioural intervention for social phobia in childhood. *Journal of Anxiety Disorders*, *18*, 459-479.

Garland, E. J. & Baerg, E. A. (2001). Amotivational syndrome associated with selective serotonin reuptake inhibitors in children and adolescents. *Journal of Child and Adolescent Psychopharmacology*, *11*, 181-186.

George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview*. (3rd edition ed.) Department of Psychology, University of California, Berkeley: Unpublished Manuscript.

Gerlsma, C., Emmelkamp, P. M. G., & Arrindell, W. A. (1990). Anxiety, depression, and perception of early parenting: a meta-analysis. *Clinical Psychology Review*, *10*, 251-277.

Ginsburg, G. S., La Greca, A. M., & Silverman, W. K. (1998). Social anxiety in children with anxiety disorders: Relation with social and emotional functioning. *Journal of Abnormal Child Psychology*, *26*, 175-185.

Gittelman-Klein, R. & Klein, D. F. (1973). School phobia: Diagnostic considerations in the light of imipramine effects. *Journal of Nervous and Mental Disease*, *156*, 199-215.

Graae, F., Milner, J., Rizzotto, L., & Klein, R. G. (1994). Clonazepam in childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, *33*, 372-376.

Graziano, A. M. & Mooney, K. C. (1980). Family self-control instruction for children's nighttime fear reduction. *Journal of Consulting and Clinical Psychology*, *48*, 206-213.

Haaga, D. A., DeRubeis, R. J., Stewart, B. L., & Beck, A. T. (1991). Relationship of intelligence with cognitive therapy outcome. *Behaviour Research and Therapy*, *29*, 277-281.

Hayward, C., Varady, S., Albano, A. M., Thienemann, M., Henderson, L., & Schatzberg, A. F. (2000). Cognitive-behavioral group therapy for social phobia in female adolescents: Results of a pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*, 721-726.

Hazan, C. & Shaver, P. (1987). Romantic love conceptualised as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511-524.

Herjanic, B. & Reich, W. (1982). Development of a structured psychiatric interview for children: agreement between child and parent on individual symptoms. *Journal of Abnormal Child Psychology*, *10*, 307-324.

Heymens Visser, J., van der Ende, J., Koot, H. M., & Verhulst, F. C. (1999). Continuity of psychopathology in youths referred to mental health services. *Journal of the American Academy of Child and Adolescent Psychiatry*, *38*, 1560-1568.

Heyne, D., King, N. J., Tonge, B. J., Rollings, S., Young, D., Pritchard, M. et al. (2002). Evaluation of child therapy and caregiver training in the treatment of school refusal. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*, 687-695.

Hirshfeld, D. R., Rosenbaum, J. F., Biederman, J., & Bolduc, E. A. (1992). Stable behavioral inhibition and its association with anxiety disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, of.

Hoofdakker, B. v. d. & Scholing, A. (2002). Behandeling van bijkomende problemen bij kinderen met een pervasieve ontwikkelingsstoornis. *Directieve Therapie*, *22*, 186-201.

Hoogduin, C. A. & Duivenvoorden, H. J. (1988). A decision model in the treatment of obsessive-compulsive neuroses. *British Journal of Psychiatry*, *152*, 516-521.

Howard, B. L. & Kendall, P. C. (1996). Cognitive-behavioral family therapy for anxiety-disordered children: A multiple-baseline evaluation. *Cognitive Therapy and Research*, *20*, 423-443.

Hoza, B., Owens, J. S., Pelham, W. E., Swanson, J. M., Conners, C. K., Hinshaw, S. P. et al. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, *28*, 569-583.

Hu, L. & Bentler, P. M. (1999). Cut-off criteria for fit indices in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55.

Ialongo, N., Edelsohn, G., Werthamer-Larsson, L., Crockett, L., & Kellam, S. (2000). The significance of self-reported anxious symptoms in first grade children: prediction to anxious symptoms and adaptive functioning in fifth grade. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *36*, 427-437.

Isaacs, E. (2001). Fluvoxamine for the treatment of anxiety disorders in children and adolescents. *New England Journal of Medicine*, *345*, 466.

Jensen, P., Roper, M., Fisher, P., Piacentini, J., Canino, G., Richters, J. et al. (1995). Test-retest reliability of the Diagnostic Interview Schedule for Children (DISC 2.1). Parent, child, and combined algorithms. *Archives of General Psychiatry*, *52*, 61-71.

Jensen, P. S., Traylor, J., Xenakis, S. N., & Davis, H. (1988). Child psychopathology rating scales and interrater agreement: I. Parents' gender and psychiatric symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry*, *27*, 442-450.

Jöreskop, K. G. & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago, IL: Scientific Software International.

Kane, M. T. & Kendall, P. C. (1989). Anxiety disorders in children: A multiple-baseline evaluation of a cognitive-behavioral treatment. *Behavior Therapy*, *20*, 499-508.

Kaplow, J. B., Curran, P. J., Angold, A., & Costello, E. J. (2001). The prospective relation between dimensions of anxiety and the initiation of adolescent alcohol use. *Journal of Clinical Child Psychology*, *30*, 316-326.

Kashani, J. H. & Orvaschel, H. (1990). A community study of anxiety in children and adolescents. *American Journal of Psychiatry*, *147*, 313-318.

Kashani, J. H., Orvaschel, H., Rosenberg, T. K., & Reid, J. C. (1989). Psychopathology in a community sample of children and adolescents: A developmental perspective. *Journal of the American Academy of Child and Adolescent Psychiatry*, *28*, 701-706.

Kearney, C. A. & Silverman, W. K. (1998). A critical review of pharmacotherapy for youth with anxiety disorders: Things are not as they seem. *Journal of Anxiety Disorders*, *12*, 83-102.

Kendall, P. C. (1994). Treating anxiety disorders in children: results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 62,* 100-110.

Kendall, P. C., Kane, M., Howard, B., & Siqueland, L. (1990). *Cognitive-behavioral therapy for anxious children: Treatment manual.* Philadelphia: Department of Psychology, Temple University.

Kendall, P. C., Brady, E. U., & Verduin, T. L. (2001). Comorbidity in childhood anxiety disorders and treatment outcome. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 787-794.

Kendall, P. C., Flannery-Schroeder, E., Panichelli-Mindel, S. M., & Southam-Gerow, M. (1997a). Therapy for youths with anxiety disorders: A second randomized clincal trial. *Journal of Consulting and Clinical Psychology, 65,* 366-380.

Kendall, P. C., Marrs-Garcia, A., Nath, S. R., & Sheldrick, R. C. (1999). Normative comparisons for the evaluation of clinical significance. *Journal of Consulting and Clinical Psychology, 67,* 285-299.

Kendall, P. C. & Pimentel, S. S. (2003). On the physiological symaptom constellation in youth with generalized anxiety disorder (GAD). *Journal of Anxiety Disorders, 17,* 211-221.

Kendall, P. C. & Southam-Gerow, M. A. (1996). Long-term follow-up of a cognitive-behavioral therapy for anxiety-disordered youth. *Journal of Consulting and Clinical Psychology, 64,* 224-230.

Kendall, P. C. & Sugarman, A. (1997b). Attrition in the treatment of childhood anxiety disorders. *Journal of Consulting and Clinical Psychology, 65,* 883-888.

Kendall, P. C. & Warman, M. J. (1996). Anxiety disorders in youth: Diagnostic consistency across DSM-III-R and DSM-IV. *Journal of Anxiety Disorders, 10,* 452-463.

Kendler, K. S., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1992). The genetic epidemiology of phobias in women. The interrelationship of agoraphobia, social phobia, situational phobia, and simple phobia. *Archives of General Psychiatry, 49,* 273-281.

Kendler, K. S., Walters, E. E., Neale, M. C., Kessler, R. C., Heath, A. C., & Eaves, L. J. (1995). The structure of the genetic and environmental risk factors for six major psychiatric disorders in women. Phobia, generalized anxiety disorder, panic disorder, bulimia, major depression, and alcoholism. *Archives of General Psychiatry, 52,* 374-383.

Kiers, H. A. L. (1990). *SCA: A program for simultaneous components analysis of variables measured in two or more populations.* University of Groningen, the Netherlands, Groningen: IEC ProGamma.

King, N. J., Eleonora, G., & Ollendick, T. H. (1998). Etiology of childhood phobias: Current status of Rachman's three pathways theory. *Behaviour Research and Therapy, 36,* 297-309.

King, N. J., Tonge, B. J., Heyne, D., Pritchard, M., Rollings, S., Young, D. et al. (1998). Cognitive-behavioral treatment of school-refusing children: A controlled evaluation. *Journal of the American Academy of Child and Adolescent Psychiatry, 37,* 395-403.

Klein, R. G., Koplewicz, H. S., & Kanner, A. (1992). Imipramine treatment of children with separation anxiety disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 21-28.

Kovacs, M. (1992). *Children's Depression Inventory Manual.* North Tonawanda, NY: Multi-Health Systems.

Kovacs, M. (1981). Rating scales to assess depression in school-aged children. *Acta Paedopsychiatrica 46,* 305-315.

Kovacs, M. & Devlin, B. (1998). Internalizing disorders in childhood. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 39,* 47-63.

Lake, M. B., Birmaher, B., Wassick, S., Mathos, K., & Yelovich, A. K. (2000). Bleeding and selective serotonin reuptake inhibitors in childhood and adolescence. *Journal of Child and Adolescent Psychopharmacology, 10,* 35-38.

Last, C. G., Hansen, C., & Franco, N. (1997). Anxious children in adulthood: A prospective study of adjustment. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 645-652.

Last, C. G., Hansen, C., & Franco, N. (1998). Cognitive-behavioral treatment of school phobia. *Journal of the American Academy of Child and Adolescent Psychiatry, 37,* 404-411.

Last, C. G., Hersen, M., Kazdin, A., & Orvaschel, H. (1991). Anxiety disorders in children and their families. *Archives of General Psychiatry, 48,* 928-934.

Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1992). DSM-III—R anxiety disorders in children: Sociodemographic and clinical characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 1070-1076.

Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1996). A prospective study of childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 35,* 1502-1510.

Last, C. G., Strauss, C. C., & Francis, G. (1987). Comorbidity among childhood anxiety disorders. *Journal of Nervous and Mental Disease, 175,* 726-730.

Laurent, J. & Ettelson, R. (2001). An examination of the tripartite model of anxiety and depression and its application to youth. *Clinical Child and Family Psychology Review, 4,* 209-230.

Lewinsohn, P. M., Gotlib, I. H., Lewinsohn, M., Seeley, J. R., & Allen, N. B. (1998). Gender differences in anxiety disorders and anxiety symptoms in adolescents. *Journal of abnormal psychology, 107,* 109-117.

Lewinsohn, P. M., Hops, H., Roberts, R. E., Seeley, J. R., & Andrews, A. (1993). Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III—R disorders in high school students. *Journal of Abnormal Psychology, 102,* 133-144.

Lichtenstein, P. & Annas, P. (2000). Heritability and prevalence of specific fears and phobias in childhood. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 41,* 927-937.

Lumpkin, P. W., Silverman, W. K., Weems, C. F., Markham, M. R., & Kurtines, W. M. (2002). Treating a heterogeneous set of anxiety disorders in youths with group cognitive behavioral therapy: A partially nonconcurrent multiple-baseline evaluation. *Behavior Therapy, 33,* 163-177.

Luteijn, E. F., Hartman, C. A., Serra, M., & Minderaa, R. B. (submitted). Further investigation of the psychometric quality of the Children's Social Behavior Questionnaire (CSBQ). An instrument for children with Autism Spectrum Disorders.

Lyneham, H., Abbott, M., & Rapee, R. M. (2004). *Inter-rater agreement on childhood anxiety disorders using structured interview* Unpublised data.

Main, M. & Solomon, J. (1990). Procedures for identifying infants as disorganized-disoriented during the Ainsworth Strange Situation. In M.Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121-160). Chicago: University of Chicago Press.

Manassis, K., Bradley, S., Goldberg, S., & Hood, J. (1995). Behavioural inhibition, attachment and anxiety in children of mothers with anxiety disorders. *Canadian journal of psychiatry*, Journal.

Manassis, K. & Monga, S. (2001). A therapeutic approach to children and adolescents with anxiety disorders and associated comorbid conditions. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 115-117.

Manassis, K., Tannock, R., Mendlowitz, S., Laslo, D., & Masellis, M. (1997). Distinguishing anxiety disorders psychometrically. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 1645.

Mancini, C., Van Ameringen, M., Szatmari, P., Fugere, C., & Boyle, M. H. (1996). A high-risk pilot study of the children of adults with social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry, 35,* 1511-1517.

March, J. (1997). 'Distinguishing anxiety disorders psychometrically': Reply. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 1646.

March, J. S., Parker, J. D. A., Sullivan, K., & Stallings, P. (1997). The Multidimensional Anxiety Scale for Children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 554-565.

Marks, I. M. & Mathews, A. M. (1979). Brief standard self-rating for phobic patients. *Behaviour Research and Therapy*, *17*, 263-267.

Marsh, H. W. & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First-order and higher-order factor models and their invariance across groups. *Psychological Bulletin*, *97*, 562-582.

Masia, C. L., Klein, R. G., Storch, E. A., & Corda, B. (2001). School-based behavioral treatment for social anxiety disorder in adolescents: Results of a pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 780-786.

McGee, R., Feehan, M., Williams, S., Partridge, F., Silva, P. A., & Kelly, J. (1990). DSM-III disorders in a large sample of adolescents. *Journal-of-the-American-Academy-of-Child-and-Adolescent-Psychiatry.1990 Jul; Vol 29(4): 611-619*, *29*, 611-619.

Mendlowitz, S. L., Manassis, K., Bradley, S., Scapillato, D., Miezitis, S., & Shaw, B. F. (1999). Cognitive-behavioral group treatments in childhood anxiety disorders: The role of parental involvement. *Journal of the American Academy of Child and Adolescent Psychiatry*, *38*, 1223-1229.

Meng, X.-L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin*, *111*, 172-175.

Merckelbach, H., de Jong, P. J., Muris, P., & van den Hout, M. A. (1996). The etiology of specific phobias: A review. *Clinical Psychology Review*, *16*, 337-361.

Merikangas, K. R., Avenevoli, S., Dierker, L., & Grillon, C. (1999). Vulnerability factors among children at risk for anxiety disorders. *Biological Psychiatry*, *46*, 1523-1535.

Monga, S., Birmaher, B., Chiappetta, L., Brent, D., Kaufman, J., Bridge, J. et al. (2000). Screen for Child Anxiety-Related Emotional Disorders (SCARED): convergent and divergent validity. *Depression and Anxiety*, *12*, 85-91.

Morris, T. L. (2001). Social phobia. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety.* (pp. 435-458). London: Oxford University Press.

Muris, P., Meesters, C., Schouten, E., & Hoge, E. (2004). Effects of perceived control on the relationship between parental rearing behaviors and symptoms of anxiety and depression in nonclinical preadolescents. *Journal of Youth and Adolescence*, *33*, 51-58.

Muris, P., Schmidt, H., & Merckelbach, H. (2000a). Correlations among two self-report questionnaires for measuring DSM-defined anxiety disorder symptoms in children: The Screen for Child Anxiety Related Emotional Disorders and the Spence Children's Anxiety Scale. *Personality and Individual Differences*, *28*, 333-346.

Muris, P., Bögels, S., Meesters, C., van der Kamp, N., & van Oosten, A. (1996). Parental rearing practices, fearfulness, and problem behavior in clinically referred children. *Personality and Individual Differences*, *21*, 813-818.

Muris, P., Meesters, C., Merckelbach, H., & Huelsenbeck, P. (2000b). Worry in children is related to perceived parental rearing and attachment. *Behaviour Research and Therapy*, *38*, 487-497.

Muris, P., Meesters, C., & van Melick, M. (2002). Treatment of childhood anxiety disorders; A

preliminary comparison between cognitive-behavioral group therapy and a psychological placebo intervention. *Journal of Behavior Therapy and Experimental Psychiatry, 33,* 143-158.

Muris, P., Meesters, C., Van Melick, M., & Zwambag, L. (2001). Self-reported attachment style, attachment quality, and symptoms of anxiety and depression in young adolescents. *Personality and Individual Differences, 30,* 809-818.

Muris, P. & Merckelbach, H. (2001). The etiology of childhood specific phobia: a multifactorial model. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety.* (pp. 355-387). London: Oxford University Press.

Muris, P., Merckelbach, H., de Jong, P. J., & Ollendick, T. H. (2002). The etiology of specific fears and phobias in children: A critique of the non-associative account. *Behaviour Research and Therapy, 40,* 185-195.

Muris, P., Merckelbach, H., Ollendick, T., King, N., & Bogie, N. (2002). Three traditional and three new childhood anxiety questionnaires: Their reliability and validity in a normal adolescent sample. *Behaviour Research and Therapy, 40,* 753-772.

Muris, P., Merckelbach, H., Schmidt, H., & Mayer, B. (1999). The revised version of the Screen for Child Anxiety Related Emotional Disorders (SCARED-R): Further evidence for its reliability and validity. *Personality and Individual Differences, 26,* 99-112.

Muris, P., Steerneman, P., Merckelbach, H., & Meesters, C. (1996). The role of parental fearfulness and modeling in children's fear. *Behaviour Research and Therapy, 34,* 265-268.

Najman, J. M., Williams, G. M., Nikles, J., Spence, S., Bor, W., O' Callaghan, M. et al. (2001). Bias influencing maternal reports of child behaviour and emotional state. *Social Psychiatry and Psychiatric Epidemiology, 36,* 186-194.

Nauta, M. H., Scholing, A., Emmelkamp, P. M. G., & Minderaa, R. B. (2001). Cognitive-behavioural therapy for anxiety disordered children in a clinical setting: Does additional cognitive parent training enhance treatment effectiveness? *Clinical Psychology and Psychotherapy, 8,* 330-340.

Nauta, M. H., Bögels, S., & Siqueland, L. (2002). *Parent Beliefs Questionnaire (PBQ).* Unpublished manuscript: Accare, Academic Center for Child and Adolescent Psychiatry Groningen, the Netherlands.

Nauta, M. H., Scholing, A., Emmelkamp, P. M., & Minderaa, R. B. (2003). Cognitive-behavioural therapy for anxiety disordered children in a clinical setting: No additional effect of a cognitive parent training. *Journal of the American Academy of Child and Adolescent Psychiatry.*

Nauta, M. H., Scholing, A., Rapee, R., Abbott, M., Spence, S., & Waters, A. (2004). A parent-report measure of children's anxiety: Psychometric properties and comparison with child-report in a clinic and normal sample. *Behaviour Research and Therapy, 42,* 813-839.

Newman, D. L., Moffitt, T. E., Caspi, A., Magdol, L., Silva, & Stanton (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11-21. *Journal of Consulting and Clinical Psychologyl, 64,* 552-562.

Nomura, Y., Wickramaratne, P. J., Warner, V., Mufson, L., & Weissman, M. M. (2002). Family discord, parental depression and psychopathology in offspring: Ten-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry, 41,* 402-409.

Nunnally, J. C. (1978). *Psychometric Theory.* New York: McGraw-Hill Book Company.

Öst, L. G., Svensson, L., Hellstroem, K., & Lindwall, R. (2001). One-session treatment of specific phobias in youths: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 69,* 814-824.

Ollendick, T. H. (1983). Reliability and validity of the Revised Fear Survey Schedule for Children (FSSC-R). *Behaviour Research and Therapy, 21,* 685-692.

Ollendick, T. H., Grills, A. E., & King, N. J. (2001). Applying developmental theory to the assessment and treatment of childhood disorders: does it make a difference? *Clinical Psychology and Psychotherapy, 8,* 304-314.

Ollendick, T. H., Yang, B., King, N. J., Dong, Q., & Akande, A. (1996). Fears in American, Australian, Chinese, and Nigerian children and adolescents: A cross-cultural study. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 37,* 213-220.

Ollendick, T. H. (1995). Cognitive behavioral treatment of panic disorder with agoraphobia in adolescents: A multiple baseline design analysis. *Behavior Therapy, 26,* 517-531.

Ollendick, T. H., Hagopian, L. P., & Huntzinger, R. M. (1991). Cognitive-behavior therapy with nighttime fearful children. *Journal of Behavior Therapy and Experimental Psychiatry, 22,* 113-121.

Ollendick, T. H., Mattis, S. G., & King, N. J. (1994). Panic in children and adolescents: A review. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 35,* 113-134.

Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology, 52,* 1-10.

Pelham, W. E. & Fabiano, G. A. (2001). Treatment of attention-deficit hyperactivity disorder: the impact of comorbidity. *Clinical Psychology and Psychotherapy, 8,* 315-329.

Perrin, S. & Last, C. G. (1992). Do childhood anxiety measures measure anxiety? *Journal of Abnormal Child Psychology, 20,* 567-578.

Piacentini, J., Bergman, R. L., Jacobs, C., McCracken, J. T., & Kretchman, J. (2002). Open trial of cognitive behavior therapy for childhood obsessive-compulsive disorder. *Journal of Anxiety Disorders, 16,* 207-219.

Pielage, S. B., Gerlsma, C., & Schaap, C. P. D. R. (2001). Insecure attachment as a risk factor for psychopathology: the role of stressful events. *Clinical Psychology and Psychotherapy, 7,* 296-302.

Pina, A. A., Silverman, W. K., Weems, C. F., Kurtines, W. M., & Goldman, M. L. (2003). A comparison of completers and noncompleters of exposure-based cognitive and behavioral treatment for phobic and anxiety disorders in youth. *Journal of Consulting and Clinical Psychology, 71,* 701-705.

Pine, D. S., Allegria, M., Cook, E. H., Costello, E. J., Dahl, R. E., Koretz, D. et al. (2002). Advances in developmental science and DSM-V. In D.J.Kupfer, M. B. First, & D. A. Regier (Eds.), *A research agenda for DSM-V* (pp. 85-122). Washington DC: American Psychiatric Association.

Pollack, M. H., Otto, M. W., Sabatino, S., & Majcher, D. (1996). Relationship of childhood anxiety to adult panic disorder: Correlates and influence on course. *American Journal of Psychiatry, 153,* 376-381.

Prince, J. B., Bostic, J. Q., Monuteaux, M., Brown, K., & Place, S. (2002). Citalopram for the treatment of adolescent anxiety disorders: a pilot study. *Psychopharmacology Bulletin, 36,* 100-107.

Prins, J. M. & Ollendick, T. H. (2003). Cognitive Change and Enhanced Coping: Missing Mediational Links in Cognitive Behavior Therapy with Anxiety-Disordered Children. *Clinical Child and Family Psychology Review, 6,* 87-105.

Puig-Antich, J. & Chambers, W. (1978). *The Schedule for Affective Disorders and Schizophrenia for School Age Children (Kiddie-SADS).* New York: New York State Psychiatric Institute.

Rachman, S. (1977). The conditioning theory of fear-acquisition: A critical examination. *Behaviour Research and Therapy, 15,* 375-387.

Rapee, R. M. (1991). Generalised anxiety disorder: A review of clinical features and theoretical concepts. *Clinical Psychology Review, 11,* 419-440.

Rapee, R. M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review, 17,* 47-67.

Rapee, R. M. (2001). The development of generalized anxiety. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety.* (pp. 481-504). London: Oxford University Press.

Rapee, R. M., Barrett, P. M., Dadds, M. R., & Evans, L. (1994). Reliability of the DSM-III-R childhood anxiety disorders using structured interview: Interrater and parent-child agreement. *Journal of the American Academy of Child and Adolescent Psychiatry, 33,* 984-992.

Renshaw, K. D., Chambless, D., & Steketee, G. (2001). Comorbidity fails to account for the relationship of expressed emotion and perceived criticism to treatment outcome in patients with anxiety disorders. *Journal of Behavior Therapy and Experimental Psychiatry, 32,* 145-158.

Rey, J. M., Schrader, E., & Morris-Yates, A. (1992). Parent-child agreement on children's behaviours reported by the Child Behavior Checklist (CBCL). *Journal of Adolescence, 15,* 219-230.

Reynolds, C. R. & Richmond, B. O. (1978). What I think and feel: A revised measure of children's manifest anxiety. *Journal of Abnormal Child Psychology, 6,* 271-280.

Rosenbaum, J. F., Biederman, J., Hirshfeld, D. R., Kagan, J., Snidman, N., Friedman, D. et al. (2000). A controlled study of behavioral inhibition in children of parents with panic disorder and depression. *American Journal of Psychiatry, 157,* 2002-2010.

Rosenbaum, J. F., Biederman, J., Bolduc-Murphy, E. A., & Faraone, S. V. (1993). Behavioral inhibition in childhood: A risk factor for anxiety disorders. *Harvard Review of Psychiatry, 1,* 2-16.

Rosenbaum, J. F., Biederman, J., Hirshfeld, D. R., & Bolduc, E. A. (1991a). Behavioral inhibition in children: A possible precursor to panic disorder or social phobia. *Journal of Clinical Psychiatry, 52,* 5-9.

Rosenbaum, J. F., Biederman, J., Hirshfeld, D. R., & Bolduc, E. A. (1991b). Further evidence of an association between behavioral inhibition and anxiety disorders: Results from a family study of children from a non-clinical sample. *Journal of Psychiatric Research, 25,* 49-65.

Rounsaville, B. J., Alarcón, R. D., Andrews, G., Jackson, J. S., Kendell, R. E., & Kendler, K. S. (2002). Basic nomenclature issues for DSM-V. In D.J.Kupfer, M. B. First, & D. A. Regier (Eds.), *A research agenda for DSM-V* (pp. 1-30). Washington DC: American Psychiatric Association.

Rynn, M. A., Siqueland, L., & Rickels, K. (2001). Placebo-controlled trial of sertraline in the treatment of children with generalized anxiety disorder. *American Journal of Psychiatry, 158,* 2008-2014.

Schniering, C. A. & Rapee, R. M. (2002). Development and validation of a measure of children's automatic thoughts: The Children's Automatic Toughts Scale. *Behaviour Research and Therapy, 40,* 1091-1109.

Scholing, A. & Emmelkamp, P. M. G. (1999a). Prediction of treatment outcome in social phobia: a cross-validation. *Behaviour Research and Therapy, 37,* 659-670.

Scholing, A., Nauta, M. H., & Spence, S. H. (1999a). *Spence Children's Anxiety Scale (Dutch Translation of Child Version).* Amsterdam, NL: University of Amsterdam.

Scholing, A., Nauta, M. H., & Spence, S. H. (1999b). *Spence Children's Anxiety Scale (Dutch Translation of Parent Version).* Amsterdam, NL: University of Amsterdam.

Serra, M., Minderaa, R. B., van Geert, P. C. L., Jackson, A. E., Althaus, M., & Til, H. B. (1995). Emotional role-taking abilities of children with a pervasive develop-mental disorder not otherwise specified. *Journal of Child Psychology and Psychiatry, 36,* 475-490.

Shortt, A. L., Barrett, P. M., & Fox, T. L. (2001). Evaluating the FRIENDS Program: A cognitive-behavioral group treatment for anxious children and their parents. *Journal of Clinical Child Psychology, 30,* 225-535.

Siebelink, B. M. & Treffers, P. D. A. (2001). *Nederlandse bewerking van het Anxiety Disorder Interview Schedule for DSM-IV: Child version van W. K. Silverman en A. M. Albano*. Lisse/Amsterdam: Swets & Zeitlinger.

Silove, D. & Manicavasagar, V. (2001). Early separation anxiety and its relationship to adult anxiety disorders. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety*. (pp. 459-480). London: Oxford University Press.

Silverman, W. K. & Albano, A. M. (1996). *Anxiety Disorders Interview Schedule for DSM IV, Child Version*. San Antonio, Texas USA: Graywind Publications Incorporated.

Silverman, W. K. & Eisen, A. R. (1992). Age differences in the reliability of parent and child reports of child anxious symptomatology using a structured interview. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 117-124.

Silverman, W. K., Saavedra, L. M., & Pina, A. A. (2001). Test-retest reliability of anxiety symptoms and diagnoses with the Anxiety Disorders Interview Schedule for DSM-IV: child and parent versions. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 937-944.

Silverman, W. K. (1994). Structured diagnostic interviews. In T.H.Ollendick, N. J. King, & W. Yule (Eds.), *International handbook of phobic and anxiety disorders in children and adolescents*. (pp. 293-315). New York: Plenum Press.

Silverman, W. K., Kurtines, W. M., Ginsburg, G. S., Weems, C. F., Lumpkin, P. W., & Carmichael, D. H. (1999a). Treating anxiety disorders in children with group cognitive-behavioral therapy: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 67,* 995-1003.

Silverman, W. K., Kurtines, W. M., Ginsburg, G. S., Weems, C. F., Rabian, B., & Serafini, L. T. (1999b). Contingency management, self-control, and education support in the treatment of childhood phobic disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 67,* 675-687.

Silverman, W. K., La Greca, A. M., & Wasserstein, S. (1995). What do children worry about? Worries and their relation to anxiety. *Child Development, 66,* 671-686.

Silverman, W. K. & Nelles, W. B. (1988). The Anxiety Disorders Interview Schedule for Children. *Journal of the American Academy of Child and Adolescent Psychiatry, 27,* 772-778.

Simeon, J. G., Ferguson, H. B., Knott, V., Roberts, N., Gauthier, B., Dubois, C. et al. (1992). Clinical, cognitive, and neurophysiological effects of alprazolam in children and adolescents with overanxious and avoidant disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 29-33.

Siqueland, L., Kendall, P. C., & Steinberg, L. (1996). Anxiety in children: Perceived family environments and observed family interaction. *Journal of Clinical Child Psychology, 25,* 225-237.

Southam-Gerow, M. A., Kendall, P. C., & Weersing, V. R. (2001). Examining outcome variability: Correlates of treatment response in a child and adolescent anxiety clinic. *Journal of Clinical Child Psychology, 30,* 422-436.

Spence, S. H. (1997). Structure of anxiety symptoms among children: a confirmatory factor-analytic study. *Journal of Abnormal Psychology, 106,* 280-297.

Spence, S. H. (1999). *Spence Children's Anxiety Scale- Parent Version*. Brisbane, QLD, Australia: University of Queensland.

Spence, S. H., Rapee, R., McDonald, C., & Ingram, M. (2001). The structure of anxiety symptoms among preschoolers. *Behaviour Research and Therapy, 39,* 1293-1316.

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36,* 545-566.

Spence, S. H., Barrett, P. M., & Turner, C. M. (2003). Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *Journal of Anxiety Disorders*, *17*, 605-625.

Spence, S. H., Donovan, C., & Brechman-Toussaint, M. (2000). The treatment of childhood social phobia: The effectiveness of a social skills training-based, cognitive-behavioural intervention, with and without parental involvement. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *41*, 713-726.

Spielberger, C. (1973). *Manual for State-Trait Anxiety Inventory for Children*. Palo Alto, CA: Consulting Psychologists Press.

Steketee, G. & Chambless, D. (1992). Methodological issues in prediction of treatment outcome. *Clinical Psychology Review*, *12*, 387-400.

Steketee, G. & Shapiro, L. J. (1995). Predicting behavioral treatment outcome for agoraphobia and obsessive compulsive disorder. *Clinical Psychology Review*, *15*, 317-346.

Stevens, J. (1996). *Applied Multivariate Statistics*. Hillsdale, New Jersey USA: Lawrence Erlbaum.

Stevenson, J., Batten, N., & Cherner, M. (1992). Fears and fearfulness in children and adolescents: a genetic analysis of twin data. *Journal of Child Psychology and Psychiatry*, *33*, 977-785.

Strauss, C. C., Frame, C. L., & Forehand, R. (1987). Psychosocial impairment associated with anxiety in children. *Journal of Clinical Child Psychology*, *16*, 235-239.

Strauss, C. C., Last, C. G., Hersen, M., & Kazdin, A. E. (1988). Association between anxiety and depression in children and adolescents with anxiety disorders. *Journal of Abnormal Child Psychology*, *16*, 57-68.

Strauss, C. C., Lease, C. A., Last, C. G., & Francis, G. (1988). Overanxious disorder: An examination of developmental differences. *Journal of Abnormal Child Psychology*, *16*, 433-443.

ten Berge, J. M. F. (1986). Rotation to perfect congruence and the cross validation of components weights accross populations. *Multivariate Behavioral Research*, *21*, 41-64.

Thapar, A. & McGuffin, P. (1995). Are anxiety symptoms in childhood heritable? *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *36*, 439-447.

Topolski, T. D., Hewitt, J. K., Eaves, L. J., Silberg, J. L., Meyer, J. M., Rutter, M. et al. (1997). Genetic and environmental influences on child reports of manifest anxiety and symptoms of separation anxiety and overanxious disorders: a community-based twin study. *Behavior Genetics*, *27*, 15-28.

Toren, P., Wolmer, L., Rosental, B., Eldar, S., Koren, S., Lask, M. et al. (2000). Case series: Brief parent-child group therapy for childhood anxiety disorders using a manual-based cognitive-behavioral technique. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*, 1309-1312.

Treadwell, K. R. H., Flannery-Schroeder, E. C., & Kendall, P. C. (1995). Ethnicity and gender in relation to adaptive functioning, diagnostic status, and treatment outcome in children from an anxiety clinic. *Journal-of-Anxiety-Disorders*, *9*, 373-384.

Turner, S. M. & Beidel, D. C. (1989). Social phobia: Clinical syndrome, diagnosis, and comorbidity. *Clinical Psychology Review*, *9*, 3-18.

Turner, S. M., Beidel, D. C., & Costello, A. (1987). Psychopathology in the offspring of anxiety disorders patients. *Journal of Consulting and Clinical Psychology*, *55*, 229-235.

Van Den Oord, E. J., Boomsma, I., & Verhulst, F. C. (1994). A study of problem behavior in 10- to 15-year-old biologically related and unrelated international adoptees. *Behavior Genetics*, *24*, 193-205.

Van Haasen, P. P., De Bruyn, E. E., Pijl, Y. J., Poortinga, Y. H., Lutje-Spelberg, H. C., Vander Steene, G. et al. (1996). *Wechsler Intelligence Scale for Children-Revised, Dutch Version*. Lisse, The Netherlands: Swets & Zetlinger B. V.

van IJzendoorn, M. H. & Bakermans-Kranenburg, M. J. (1996). Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. *Journal of Consulting and Clinical Psychology, 64,* 8-21.

Vander-Stoep, A., Weiss, N. S., McKnight, B., Beresford, S.-A. A., & Cohen, P. (2002). Which measure of adolescent psychiatric disorder—diagnosis, number of symptoms, or adaptive functioning—best predicts adverse young adult outcomes? *Journal of Epidemiology and Community Health, 56,* 56-65.

Vasey, M. W., Crnic, K. A., & Carter, W. G. (1994). Worry in childhood: A developmental perspective. *Cognitive Therapy and Research, 18,* 529-549.

Verhulst, F. C., van der Ende, J., & Koot, H. M. (1996). *Handleiding voor de CBCL / 4-18. Child Behavior Checklist / 4-18 (CBCL).* Rotterdam: Erasmus Universiteit, Sophia Kinderziekenhuis, afdeling Kinder- en Jeugdpsychiatrie.

Verhulst, F. C. & van der Ende, J. (1992). Six-year stability of parent-reported problem behavior in an epidemiological sample. *Journal of Abnormal Child Psychology, 20,* 595-610.

Verhulst, F. C., van der Ende, J., Ferdinand, R. F., & Kasius, M. C. (1997). The prevalence of DSM-III-R diagnoses in a national sample of Dutch adolescents. *Archives of General Psychiatry, 54,* 329-336.

Warner, V., Weissman, M. M., Mufson, L., & Wickramaratne, P. J. (1999). Grandparents, parents, and grandchildren at high risk for depression: a three-generation study. *Journal of the American Academy of Child and Adolescent Psychiatry, 38,* 289-296.

Walkup, J., Labellarte, M., Riddle, M.N., Pine, D.S., Greenhill, L., Fairbanks, J., Klein, R., Davies, M., Sweeney, M., Abikoff, H., Hack, S., Klee, B., Bergman, R.L., Lynn, D., McCracken, J., March, J., Gammon, P., Vitiello, B., Ritz, L., and Roper, M. (2002). Treatment of pediatric anxiety disorders: an open-label extension of the research-units on pediatric psychopharmacology anxiety study. *Journal of Child & Adolescent Psychopharmacology, 12,* 175-188.

Warner, V., Mufson, L., & Weissman, M. M. (1995). Offspring at high and low risk for depression and anxiety: Mechanisms of psychiatric disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 786-797.

Warren, S., Huston, L., Egeland, B., & Sroufe, L. A. (1997). Child and adolescent anxiety disorders and early attachment. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 637-644.

Wechsler, D. (1999). *Wechsler Intelligence Scale for Children - Third Edition.* San Antonio, TX: Psychological Corporation.

Weems, C. F., Silverman, W. K., & La Greca, A. M. (2000). What do youth referred for anxiety problems worry about? Worry and its relation to anxiety and anxiety disorders in children and adolescents. *Journal of Abnormal Child Psychology, 28,* 63-72.

Weems, C. F., Silverman, W. K., Saavedra, L. M., Pina, A. A., & Lumpkin, P. W. (1999). The discrimination of children's phobias using the Revised Fear Survey Schedule for Children. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 40,* 941-952.

Weiss, D. D. & Last, C. G. (2001). Developmental variations in the prevalence and manifestations of anxiety disorders. In M.W.Vasey & M. R. Dadds (Eds.), *The developmental psychopathology of anxiety* (pp. 27-42). London: Oxford University Press.

Weissman, M. M. (1988). The epidemiology of anxiety disorders: Rates, risks and familial patterns. *Journal of Psychiatric Research, 22,* 99-114.

Weisz, J. R. & Weiss, B. (1989). Assessing the effects of clinic-based psychotherapy with children and adolescents. *Journal of Consulting and Clinical Psychology, 57,* 741-746.

Weisz, J. R., Weiss, B., & Donenberg, G. R. (1992). The lab versus the clinic: Effects of child and adolescent psychotherapy. *American Psychologist, 47,* 1578-1585.

Whaley, S. E., Pinto, A., & Sigman, M. (1999). Characterizing interactions between anxious mothers and their children. *Journal of Consulting and Clinical Psychology, 67,* 826-836.

Whittington, C. J., Kendall, T., Fonagy, P., Cottrell, D., Cotgrove, A., & Boddington, E. (2004). Selective serotonine reuptake inhibitors in childhood depression: systematic review of published versus unpublished data. *The Lancet, 363,* 1341-1345.

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2003). A model of dual attitudes. *Psychological Review, 107,* 101-126.

Wolraich, M. L. (2003). Annotation: the use of psychotropic medications in children: an American review. *Journal of Child Psychology and Psychiatry, 44,* 159-168.

Zinbarg, R. E. & Barlow, D. H. (1996). Structure of anxiety and the anxiety disorders: a hierarchical model. *Journal of Abnormal Psychology, 105,* 181-193.

Zito, J. M., Derivan, A. T., & Greenhill, L. L. (2004). Making research data available: an ethical imperative demonstrated by the SSRI debacle. *Journal of the American Academy of Child and Adolescent Psychiatry, 43,* 512-514.

Samenvatting

Angststoornissen bij kinderen en jongeren

Diagnostiek, cognitieve gedragstherapie en voorspellers van therapieresultaat

Dit proefschrift beschrijft een aantal onderzoeken rond de diagnostiek en behandeling van kinderen en jongeren (8-18 jaar) met angststoornissen. Bij de start van dit onderzoek, in 1996, was er op dit gebied weinig bekend. Zo was er pas in één studie onderzocht of cognitieve gedragstherapie bij angstige kinderen effect had. Over de rol van ouders daarbij was op dat moment nog niks geschreven. Voor het huidige onderzoek waren belangrijke vragen: hoe kunnen we symptomen van angst bij kinderen en jongeren via vragenlijsten het beste in kaart brengen? Is een cognitief gedragstherapeutische behandeling voor angst bij kinderen en jongeren effectief in instellingen voor jeugdhulpverlening? Leidt extra oudertraining tot betere resultaten bij de kinderen? En tot slot: welke factoren beïnvloeden de effectiviteit van behandeling? Hierbij werd bijvoorbeeld bekeken of kinderen met meer depressieve symptomen minder baat hadden bij behandeling, of dat een slechtere relatie tussen de ouders leidde tot minder resultaat van de behandeling.

In hoofdstuk 1 wordt een algemeen overzicht gegeven van angststoornissen bij kinderen. Belangrijk uitgangspunt is dat angst primair een nuttig gevoel is: het waarschuwt voor gevaar, het is een soort alarmbel om aan te geven dat alertheid gewenst is, bijvoorbeeld in het verkeer. Echter, bij kinderen met angststoornissen gaat deze alarmbel te vaak af en belemmert de angst hen in hun functioneren. Angststoornissen bij kinderen uiten zich op allerlei manieren: fysiologisch (trillen, hoofdpijn, buikpijn), cognitief (vervelende gedachten over nare dingen die kunnen gebeuren en veel piekeren) en gedragsmatig (angstige situaties ofwel uit de weg gaan ofwel ondergaan met huilen, 'bevriezen' of verstijven, of prikkelbaar, mopperig of opstandig gedrag en geruststelling vragen). Er zijn verschillende soorten angststoornissen, die zich elk anders uiten. In dit proefschrift betreft het kinderen met separatieangst, sociale fobie, gegeneraliseerde angststoornis, en / of paniek met of zonder agorafobie. Kinderen met angst voortkomend uit een erg akelige en bedreigende gebeurtenis of meerdere akelige gebeurtenissen (posttraumatische stress stoornis) vielen buiten de focus van dit proefschrift. Bij kinderen met separatieangst speelt vooral de angst om zonder de ouders of verzorgers te zijn: het zijn kinderen die bang zijn dat er iets met hun ouders kan gebeuren of dat ze zelf ontvoerd kunnen worden. Hierdoor kan het kind bijvoor-

beeld niet alleen naar school lopen of alleen inslapen. Kinderen met sociale fobie zijn vooral bang voor het oordeel van anderen. Ze zijn bang om fouten te maken of stom te lijken in ogen van anderen. Vaak gaan ze situaties uit de weg waarin ze in de belangstelling staan, zoals iets vragen in de klas, naar sportclubs gaan, een vriendinnetje vragen om te komen spelen of huiswerk te maken, enz. Bij kinderen met gegeneraliseerde angststoornis is vooral sprake van overmatig piekeren. Ze maken zich zorgen over dingen die in de wereld gebeuren, over huiswerk, vrienden, ziektes of mogelijke echtscheiding van de ouders, terwijl er ogenschijnlijk geen aanleiding voor is. Ze kunnen hun gedachten niet stoppen, slapen vaak slecht in en vragen veel geruststelling. Kinderen en jongeren met paniek en agorafobie zijn vooral bang voor de angst: ze zijn bang om ineens heel angstig te worden en dan bijvoorbeeld flauw te vallen of de controle te verliezen.
Uit eerder onderzoek is gebleken dat een angststoornis zelden alleen komt: de meeste kinderen hebben naast de belangrijkste angststoornis een andere angststoornis, een stemmingsstoornis, of andere problematiek zoals druk gedrag of aandachtsproblemen (zoals bij ADHD) of oppositionele gedragsproblemen. Angst- en stemmingsproblemen komen vaak samen voor en overlappen voor een deel ook in symptomen. Zo heeft zo'n 20% van de basisschoolkinderen en 50% van de adolescenten met een angststoornis naast deze angststoornis ook een stemmingsstoornis. Ook is gebleken dat kinderen en jongeren met angststoornissen veel last ondervinden van hun problemen: ze hebben minder vriendschappen, minder gevoel van eigenwaarde, presteren slechter op school en hebben ook een grotere kans om de middelbare school zonder diploma te verlaten. Naast deze behoorlijke impact van angststoornissen op het huidig functioneren van kinderen, zijn er sterke aanwijzingen dat deze kinderen of jongeren als volwassene weer of nog steeds een angststoornis zullen hebben, of andere problemen ontwikkelen zoals een stemmingsstoornis of middelenmisbruik.
Angststoornissen komen dus veel voor bij kinderen en jongeren en hebben een grote invloed op het huidig en later functioneren. Dit maakt dat het belangrijk is om kinderen met angststoornissen op te sporen (bijvoorbeeld door middel van goed gevalideerde vragenlijsten) en om effectieve behandelingen te ontwikkelen.

Er is een aantal manieren om angst bij kinderen in kaart te brengen, zoals via diagnostische interviews, of via vragenlijsten die bij het kind of de ouders worden afgenomen. In hoofdstuk 1 worden verschillende van deze meetinstrumenten besproken. Concluderend was er ten tijde van de start van dit proefschrift behoefte aan vragenlijsten die zowel bij het kind als bij de ouders symptomen van angst van het kind konden meten, waarbij de bovengenoemde indeling in classificaties volgens de DSM-IV-TR gevolgd werd. Een belangrijk onderdeel van dit onderzoek werd de grondige evaluatie van deze vragenlijsten (hoofdstuk 2 en 3).
Over de behandeling van angstige kinderen en jongeren was bij de start van dit proefschrift nog weinig bekend. De studies die waren gedaan hadden betrekking op weinig kinderen en gebruikten geen controlegroepen. Slechts één studie vergeleek cognitieve gedragstherapie (CGT) met een wachtlijst-controlegroep (Kendall, 1994). Er was nog geen onderzoek gedaan naar de mogelijke meerwaarde van ouderinterventies. Inmiddels kan een overzicht gemaakt worden met maar liefst 22 gecontroleerde studies (zie hoofdstuk 1). Weinig studies werden

uitgevoerd in de klinische praktijk. Bij verreweg de meeste studies was sprake van een onderzoeksinstelling: een afdeling van de universiteit die op een specifiek gebied effect-onderzoek doet. Voor dit type onderzoek worden angstige kinderen voor deelname geworven via de media, scholen of huisartsen. Het is belangrijk om te onderzoeken of de behandelingen die zijn ontwikkeld in universiteiten ook even effectief zijn in de klinische praktijk. Het huidige onderzoek richtte zich dan ook op de vraag of CGT effectief is in de klinische praktijk, en of een extra ouderinterventie leidt tot extra vermindering van de angstklachten van het kind (hoofdstuk 4 en 5).
Tenslotte wordt in hoofdstuk 1 een overzicht gegeven van de mogelijke voorspellers van therapieresultaat. Het is de vraag of het mogelijk zal zijn op basis van die variabelen een behandeling bij een kind werkt of niet werkt. Er worden zowel factoren beschreven die te maken hebben met het kind (zoals de ernst of duur van de klachten, of het hebben van meerdere klachten), als factoren die te maken hebben met de ouders (zoals relatie-tevredenheid of eigen angstproblematiek). In hoofdstuk 6 en 7 worden deze factoren verder uitgewerkt en geanalyseerd voor de behandelde kinderen.

In hoofdstuk 2 en 3 worden twee onderzoeken beschreven waarin twee meetinstrumenten worden ontwikkeld en geëvalueerd om angst van kinderen in kaart te brengen. Het eerste onderzoek betreft een evaluatie van een vragenlijst die het kind zelf invult over de eigen angst, de SCAS (Spence Children's Anxiety Scale; Spence 1998). De lijst was eerder ontwikkeld door Spence en afgenomen bij een grote groep Australische basisschoolkinderen. Doel van het huidige onderzoek, beschreven in hoofdstuk 2, was de evaluatie van dezelfde lijst in een grote groep klinisch angstige kinderen (N=565) van 7-16 jaar, afkomstig uit Australië en Nederland. Hiernaast werd gebruik gemaakt van een controlegroep van 654 kinderen van basisscholen en middelbare scholen.
De SCAS is een vragenlijst van 38 items die door kinderen wordt ingevuld op een schaal van 0 'nooit' tot 3 'altijd'. Er kan zowel een totaalscore worden berekend als zes verschillende subschaalscores, namelijk separatieangst (6 items), sociale angst (6 items), gegeneraliseerde angst (6 items), paniek / agorafobie (9 items), obsessief compulsieve stoornis (6 items) en angst voor lichamelijke verwonding (5 items). De eerste vijf subschalen representeren elk een angststoornis die ook gediagnostiseerd kan worden met behulp van de DSM-IV-TR, een internationaal classificatiesysteem van psychopathologie. In een confirmatieve factor-analyse in de nieuwe klinische groep werden dezelfde 6 factoren teruggevonden als in de oorspronkelijke Australische steekproef van scholieren. Deze factoren bleken invariant te zijn over de klinische en niet-klinische groep, leeftijd, sexe en land (Australië versus Nederland). Betrouwbaarheden van subschalen bleken voldoende tot zeer goed. Convergente en divergente validiteit waren goed: in de klinische groep correleerde de SCAS hoger met andere angstmaten (inclusief automatische gedachten en oudermaten) dan met maten die depressie, externaliserend gedrag, of niet-angstige automatische gedachten maten. Op basis van SCAS-scores kon goed onderscheid gemaakt worden tussen klinisch angstige kinderen en controle kinderen. Bovendien was er voldoende verschil in scores tussen kinderen met verschillende angststoornissen. De SCAS lijkt een veelbelovend instrument, zowel voor diagnostisch gebruik in de klinische praktijk als voor screeningsdoeleinden in groepen schoolkinderen.

Het tweede vragenlijstonderzoek, dat wordt beschreven in hoofdstuk 3, betreft de ontwikkeling van een lijst die ouders over hun kind kunnen invullen. Het is de ouderversie van de boven beschreven SCAS, de SCAS-p (Spence Children's Anxiety Scale, parent version; Spence, 1999). Bij de diagnostiek van kinderen of adolescenten is het belangrijk om informatie van meerdere bronnen te gebruiken, te meer omdat uit eerder onderzoek is gebleken dat de overeenstemming tussen de bronnen notoir laag is. Blijkbaar geven de verschillende bronnen een ander soort informatie. Hoofdstuk 3 beschrijft een studie waarin 484 kinderen met angststoornissen en hun ouders en 261 niet-klinische kinderen en hun ouders deelnamen. Resultaten van een confirmatieve factoranalyse lieten zien dat er sprake is van zes gecorreleerde factoren, die overeenkomen met de kinderlijst en met de classificatie van angststoornissen volgens de DSM-IV-TR (namelijk separatieangst, gegeneraliseerde angst, sociale fobie, paniek / agorafobie en obsessief-compulsieve stoornis, en (niet DSM-gerelateerd) angst voor lichamelijke verwonding). In een post-hoc model werd getoetst of de factor gegeneraliseerde angst kon dienen als een hogere orde factor die de variantie van de andere vijf factoren verklaarde. Dit model bleek ook de data goed te kunnen beschrijven. De betrouwbaarheid van de subschalen was voldoende tot zeer goed. Convergente en divergente validiteit bleken goed: de SCAS-p correleerde hoger met internaliserend gedrag en lager met externaliserend gedrag. De overeenstemming tussen ouders en kind varieerde van .41 tot .66 in de groep klinisch angstige kinderen en van .23 tot .60 in de niet-klinische groep. Er werd een significant verschil gevonden tussen de klinische en de niet-klinische groep, en ook tussen bijna alle verschillende angststoornissen, behalve gegeneraliseerde angst. Kortom, ook de SCAS-p belooft een goed instrument te zijn en werd aangeraden als screeningsinstrument voor niet-klinische kinderen en als diagnostisch instrument in de klinische praktijk.

In hoofdstuk 4 wordt een pilot-onderzoek beschreven naar de effectiviteit van cognitieve gedragstherapie (CGT) bij angstige kinderen die verwezen zijn naar reguliere hulpverlening, in dit geval naar de polikliniek van het Universitair Centrum voor Kinder- en Jeugdpsychiatrie in Groningen. Het bijzondere aan dit onderzoek en het onderzoek beschreven in Hoofdstuk 5 is dat het heeft plaatsgevonden in reguliere instellingen. Behandelonderzoek dat tot dan toe was gedaan was alleen uitgevoerd in universiteitsklinieken, die in verschillende opzichten kunnen verschillen van reguliere instellingen voor jeugdhulpverlening. Het doel van dit vooronderzoek was tweeledig: de evaluatie van de effectiviteit van CGT in de klinische praktijk enerzijds en het onderzoeken van de mogelijke meerwaarde van oudertraining anderzijds. Achttien kinderen kregen allen twaalf sessies CGT, en alle ouders werden bij de behandeling betrokken in twee sessies waarin ze informatie kregen over de manier van werken bij CGT. Bovendien werd elk gezin via loting toegewezen aan een van de volgende behandelcondities: 1. geen extra behandeling of 2. extra Cognitieve OuderTraining (COT) bestaande uit zeven sessies die om de week werden gehouden bij een aparte therapeut naast de lopende CGT voor het kind. Voor en na behandeling, na drie maanden en na 15 maanden werden metingen verricht, bestaande uit een semi-gestructureerd diagnostisch interview en vragenlijsten voor zowel ouders als kinderen. Zowel de kinderen als de ouders gaven in vragenlijsten aan dat de kinderen na behandeling significant minder symptomen van angst

hadden. Bij de meting drie maanden na behandeling was het angstnivo van de kinderen zelfs tot een vergelijkbaar nivo als van een normale controlegroep gekomen. Bij de ouderrapportages werd de vooruitgang met name gerapporteerd tussen de nameting en de nameting na drie maanden. De extra oudertraining gaf geen meerwaarde boven de kindtherapie. De meting na 15 maanden liet zien dat de kinderen weer wat meer angstsymptomen rapporteerden, terwijl de ouderrapportages gelijk bleven. Opvallend in de resultaten na 15 maanden waren de grote verschillen tussen de kinderen: bij vijf kinderen was er sprake van ernstige psychopathologie, terwijl het de met twaalf andere kinderen erg goed ging. Gezien de kleine steekproefgrootte konden hier geen absolute conclusies uit worden getrokken.

In hoofdstuk 5 wordt een grotere studie beschreven waarin 79 angstige kinderen van 7 tot 18 jaar werden geïncludeerd. Het ging om kinderen die waren verwezen naar de polikliniek van het Universitair Centrum Kinder- en Jeugdpsychiatrie (UCKJP) in Groningen of naar de jeugdafdeling van het Centrum voor Geestelijke Gezondheidszorg van Groningen-Zuid (voormalig RIAGG). Om tot een voldoende grote steekproefomvang te komen werden er ook kinderen geworven via huisartsen, scholen en de media. Zij kwamen voor de eerste intake naar Klinische Psychologie van de Rijksuniversiteit Groningen, en de behandeling van deze kinderen vond na verwijzing plaats bij het UCKJP. Het doel van dit onderzoek was wederom het onderzoeken van de effectiviteit van twaalf sessies CGT bij angstige kinderen en de mogelijke meerwaarde van een cognitieve oudertraining (COT) van 7 sessies. Dit maal werd er ook een wachtlijstcontrole-conditie van twaalf weken aan het design toegevoegd. Bij de drie metingen (voormeting, nameting, follow-up na drie maanden) werd een semi-gestructureerd diagnostisch interview afgenomen bij het kind en bij de ouders (over het kind), en daarnaast vulden de kinderen vragenlijsten in over angst en depressie en hun ouders over angst, internaliserend en externaliserend gedrag van het kind. Over het algemeen hadden kinderen meer baat bij CGT dan bij een wachtlijst. Dit effect was groot en significant ten aanzien van diagnose en in de ouderlijsten, maar niet in de kinderlijsten. De kinderen gaven hoe dan ook een vermindering van symptomen over de tijd aan. In de actieve behandelconditie verbeterden de kinderen op zelfgerapporteerde angst en depressie en op ouderrapportages van angst en internaliserend gedrag. Het angstniveau van de kinderen was drie maanden na behandeling even hoog als bij een controlegroep wat de kinderrapportage betreft, terwijl ouders nog steeds een hoger angstniveau aangaven in vergelijking tot ouders in de controlegroep.
Er was geen verschil tussen de klinisch verwezen kinderen en de kinderen die werden geworven voor het onderzoek: ze waren even angstig bij de start van behandeling en verbeterden net zoveel. De oudertraining liet geen meerwaarde zien: kinderen verbeterden evenveel wat betreft angst, depressie en internaliserend gedrag, onafhankelijk van ouderlijke deelname aan de cognitieve oudertraining.

In hoofdstuk 6 wordt beschreven of de resultaten van de behandeling voorspeld konden worden op basis van kenmerken van het kind. Er bleek geen verschil in effectiviteit te zijn wat betreft leeftijd, geslacht, specifieke primaire angststoornis, gehechtheidstijl, of

symptomen van externaliserend gedrag of een pervasieve ontwikkelingsstoornis (NAO). Het wel of niet hebben van een angststoornis bij de nameting of een jaar na behandeling hield wel verband met de ernst van de klachten op de voormeting, duur van de klachten, symptomen van depressie of dwang, het aantal stoornissen voor behandeling, eerdere behandeling, en lagere intelligentie. Wanneer al deze variabelen samen werden genomen, bleken eerdere behandeling, comorbiditeit en intelligentie de belangrijkste voorspellers. Tevens werd gekeken naar voorspellers van verbetering na therapie. Verbetering kon het best voorspeld worden door duur van de klachten, internaliserende symptomen, en intelligentie, waarbij duur van de klachten de sterkste voorspeller was. Vervolgens werd het wel of niet hebben van een angststoornis na één jaar voorspeld vanuit de nameting. De mate van comorbiditeit, en de ernst en de belemmering door de klachten op de nameting kwamen naar voren als sterke voorspellers. Wat de oudertraining betreft was er geen interactie-effect tussen de extra oudertraining, therapieresultaat en de voorspellers. Dit wil zeggen dat de voorspellers niet meer of minder sterk waren wanneer de ouders wel of geen extra oudertraining hadden gekregen. Er zijn wat dit onderzoek betreft twee belangrijke implicaties voor de klinische praktijk. Ten eerste speelt duur van de klachten blijkbaar een belangrijke rol. Het is dus zaak om kinderen in een vroeg stadium van de ontwikkeling van een angststoornis op de sporen en cognitieve gedragstherapie aan te bieden. De tweede implicatie voor de praktijk is dat kinderen met lagere intelligentie en ernstiger symptomen van angst of depressie of dwang (op voor- of nameting) in de gaten gehouden moeten worden omdat ze risico lopen minder te verbeteren. Dit onderzoek heeft niet bekeken wat er dan het beste gedaan kan worden. Aangezien er niet volledig te voorspellen is wie wel en niet verbetert op basis van de voormeting, lijkt het verstandig om bij alle kinderen met CGT te starten (momenteel de behandeling waarvan het effect het beste is aangetoond), en vervolgens vooral die kinderen die na behandeling nog symptomen van angst, depressie of dwang rapporteren langer te volgen, extra sessies CGT te geven, wellicht extra interventies met de ouders toe te voegen, of wellicht een andere behandeling te overwegen. Vervolgonderzoek zou er verder op in kunnen gaan wat de beste behandeling is voor die kinderen die onvoldoende verbeteren na twaalf sessies CGT.

In hoofdstuk 7 worden mogelijke voorspellers van therapieresultaat beschreven die te maken hebben met het gezin. Op grond van eerder onderzoek en theorie werden de volgende mogelijke voorspellers geselecteerd: fobische angst van de ouders, angstig / depressieve stemming van de ouders, relatietevredenheid, huidige opvoedingsstijl (warmte en overbescherming), en de terugblik van de ouders op hun eigen opvoeding (warmte en overbescherming).
Allereerst werd gekeken of deze variabelen überhaupt verschillend waren van een niet-klinische groep. Vaders van de angstige kinderen bleken hoger te scoren op fobische angst en vermijding, maar niet op angstig / depressieve stemming, en moeders gaven meer symptomen van angst en depressie aan. Wat betreft opvoeding gaven de angstige kinderen aan meer overbescherming te ervaren van zowel hun vader als hun moeder, terwijl de mate van ervaren warmte gelijk was in de niet-klinische groep. Hetzelfde gold voor de ouderrapportages over hun vroegere opvoeding: ook zij hadden meer overbescherming ervaren,

maar niet minder warmte. Er bleek geen verschil te zijn in relatietevredenheid: ouders van angstige en net-angstige kinderen waren even tevreden over hun relatie. Vervolgens werd bestudeerd of de groep kinderen die na behandeling geen angstdiagnose had verschilde van de groep die na behandeling nog wel een angstdiagnose had. De groepen bleken niet te verschillen op welke variabele dan ook, noch bij de nameting, noch bij de follow-ups na drie maanden of een jaar. Vervolgens werden 'residual gain scores' (RGSs) berekend, dat zijn scores die een indicatie geven voor de mate van verbetering van het kind, waarbij rekening wordt gehouden met het beginniveau van angst. Enkele variabelen lieten een trend zien van een klein verband zien met de RGSs (significant op alfa = 0.10): een meer angstige / depressieve stemming van moeder, een lagere relatietevredenheid van moeder, en hogere scores van vader op retrospectief minder warmte en meer overbescherming van zijn moeder hielden verband met minder goed therapieresultaat voor het kind. Anderzijds bleek dat hoe meer symptomen van fobische angst door vader werden gerapporteerd, des te beter het kind was opgeknapt na therapie. De huidige opvoedingsstijl hield geen verband met therapieresultaat. Vervolgens werden alle variabelen gezamenlijk in één model getoetst, om te kijken of ze gezamenlijk het therapieresultaat zouden kunnen voorspellen. Dit model bleek niet significant, noch met betrekking tot de nameting, noch met betrekking tot de follow-up. Kortom, in dit hoofdstuk werd beschreven dat er weliswaar oudervariabelen zijn waarop angstige kinderen verschilden van hun leeftijdsgenoten, maar dat de variabelen niet samenhingen met therapieresultaat. Voor de klinische praktijk betekent dit dat we op basis van oudervariabelen blijkbaar geen inschatting kunnen maken van of een kind baat zal hebben bij therapie of niet. Bovendien betekent het dat kinderen niet uitgesloten hoeven te worden van CGT op basis van inschattingen van opvoedingsstijl, ouderlijke psychopathologie of relatietevredenheid.

Hoofdstuk 8 tenslotte vat de conclusies van de onderzoeken samen en doet aanbevelingen voor verder onderzoek. Terugkomend op de vragen aan het begin van deze samenvatting kan dus het volgende worden gesteld: wanneer we kinderen en hun ouders vragenlijsten in laten vullen over symptomen van angst, en we deze gegevens verder analyseren, blijkt dat de symptomen sterk samenhangen. Bovendien clusteren de symptomen in groepjes die passen bij het classificatiesysteem van de DSM-IV-TR dat vaak gehanteerd wordt. Het is dus zowel nuttig om te spreken van één angstconcept, als om de indeling in de verschillende clusters te handhaven. Zowel de kindervragenlijst als de oudervragenlijst konden kinderen met en zonder angststoornissen goed van elkaar onderscheiden, en de overeenstemming tussen ouders en kind was relatief hoog. Ook andere psychometrische eigenschappen van de lijsten waren voldoende of goed te noemen.
Cognitieve gedragstherapie bleek effectief voor kinderen en jongeren in centra voor jeugdhulpverlening: zo'n 60-70% van de kinderen had na behandeling geen angststoornis meer, en deze resultaten werden behouden tot drie en twaalf maanden na afronding van de behandeling. De extra oudertraining had geen meerwaarde boven de individuele behandeling: de kinderen knapten in beide condities even goed op. Tot slot bleek dat vooral factoren die met het kind te maken hebben in verband staan met de slagingskans van behandeling. Kinderen met veel angstsymptomen voor het begin van de behandeling, een langere duur

van de klachten, eerdere behandeling, extra symptomen van depressie of dwang, of een lagere intelligentie hadden een minder goed behandelresultaat. Het zou goed kunnen dat deze kinderen een langere behandelduur nodig hebben. Ouderfactoren, zoals relatietevredenheid, opvoedingsstijl of problematiek van de ouders zelf bleken, tegen de verwachting in, niet voorspellend voor het resultaat van de behandeling.

Dankwoord

Dit proefschrift is tot stand gekomen met de praktische of morele hulp van velen. Hiervoor wil ik al die mensen dan ook hartelijk bedanken. Meer specifiek gaan mijn gedachten uit naar de volgende mensen:

Allereerst mijn eerste promotor, Paul Emmelkamp. De principes van de gedragstherapie en van het doen van onderzoek heb ik als student van jou geleerd. Je hebt me blijvend enthousiast gemaakt voor de combinatie van wetenschappelijk onderzoek en patiëntenzorg. Ik heb veel geleerd van de rake manier waarop je telkens de vinger op de zwakke of onlogische plek van de stukken wist te leggen, en van je pragmatische manier van oplossingen kiezen.

Mijn co-promotor, Agnes Scholing, wil ik bedanken voor haar grondigheid, helderheid en geweldige taalvaardigheid. Voor mij ingewikkelde problemen konden ineens weer helder worden, waarmee de oplossing ook voor de hand leek te liggen. Ik heb bijzonder veel van je geleerd, en vlei me met de gedachte dat er iets van jouw kunde via modeling op mij is overgedragen. Toen jij, na Paul, ook besloot naar Amsterdam te vertrekken schoten er wel wat de separatie-angstige cognities door mijn hoofd, zoals 'straks red ik het niet alleen'. Gelukkig hebben deze zich in een lange periode van exposure kunnen ontwikkelen tot allerlei cognities rond zelfredzaamheid. Dit was niet gebeurd zonder jullie vlotte reacties op mails en zorgvuldige commentaar op stukken. Jullie hebben me veel eigen verantwoordelijkheid gegeven in het opzetten en uitvoeren van het project, bedankt voor dit vertrouwen.

Ruud Minderaa, tweede promotor, dank voor het faciliteren van mijn promotie bij Accare en het vertrouwen in mijn project en mijn zelfstandigheid.

Suzanne Pielage, fijne vriendin, collega, paranimf: dank voor je opbeurende aanwezigheid, je scherpte, je collegialiteit. Je hebt veel met me meegedacht en meegeleefd en hebt me zonder meer geholpen bij het nemen van allerlei beslissingen. Ik hoop dat onze wegen zich blijven kruisen en volgen, zowel op werkgebied als daarnaast.

Collega's van Klinische Psychologie, wat hebben we samen veel meegemaakt aan verhuizingen, afscheidsetentjes en de verwelkoming van nieuwkomers. Ik heb er goede herinneringen aan. In het bijzonder bedank ik Theo Bouman voor zijn vrolijke en relativerende noot, en mijn mede-promovendi voor hun gezelligheid.

De onderzoeksschool EPP is voor mij heel leerzaam en motiverend geweest, met dank aan de organisatoren, sprekers en mede-promovendi. De symposia waren gezellig, prikkelend, inhoudelijk sterk en leerzaam. Ook voor de inwendige mens werd altijd goed gezorgd.

Alle kinderen, ouders, broertjes en zusjes wil ik graag bedanken voor het invullen van alle vragenlijsten en het meewerken aan de vele interviews.

Beste Jaap Ringrose, dank voor de prettige samenwerking, je steun en oprechtheid. Zoals je weet is mijn dankbaarheid breder dan alleen voor al het praktische werk dat je in deze tijd op je hebt genomen, zoals de supervisie van de therapeuten bij Accare. Therapeuten / stagiaires (Ivanka, Jeannette, Reni, Suzanne, Cornelie, Yvonne, Tineke, Sebina, Marie, Marianne, Myrthe, Anne-Marijne, Marjan, Cynthia, AnneMarie, Hadeweij, Daniel en Cathelijne): dank jullie voor je enthousiasme bij het behandelen en jullie betrokkenheid bij de kinderen en de ouders. Cynthia en Marjan wil ik in het bijzonder bedanken: tijdens mijn verlof was mijn werk bij jullie in goede handen. Menno, dank dat je me een tijd hebt vrijgesteld van klinisch werk, waardoor ik een eind kon opschieten met het schrijven van dit proefschrift. En andere collega's van Accare, dank voor jullie belangstelling en de prettige samenwerking. Ik kijk ernaar uit om gezamenlijk de combinatie van onderzoek en patiëntenzorg op de polikliniek verder vorm te geven.

Carla Appelboom, bedankt voor je betrokken en prettige manier van coördineren van het project bij de GGZ-Groningen-Zuid. Therapeuten (Carla, Bianca, Els, Olga, Adriana, Barbara, Mirjam, Ilse en Leonie), dank voor jullie enthousiasme en zorgvuldigheid bij het uitvoeren van de behandelingen.

Anne Boomsma en Dick Barelds wil ik bedanken voor het meedenken over de statistische analyses die in dit proefschrift zijn gebruikt.

Professor Kendall, dear Phil, many thanks to you and your graduate students for organizing my one-month visit to Philadelphia. It has been a very inspiring period and a source of energy throughout the writing of my thesis.

Susan Spence and Ron Rapee, thanks for sharing your data with me, and thanks for your trust in writing the papers in collaboration. I have learnt a lot from your thorough feedback in the writing process.

Claire Hayes, thanks for being such wonderful support. You have been a great sparing partner in this long process. I hope we will share many more virtual and actual cups of coffees and 'sláintes' in the future!

Wim van Borselen, leertherapeut, dank voor je nietsontziende 'natúúrlijk ga je dit afschrijven'. Het ís af, gelukkig en eindelijk.

En dan de mensen die dichtbij me staan, mijn familie: lieve mam, pap, Thea, Remko en schoonfamilie; mijn vriendinnen: lieve Aukje, Corry, Leonie, Stella; andere vrienden en vriendinnen: wat fijn dat jullie zo hebben meegedacht, of meer nog: vaak niet hebben meegedacht. Juist ook alles buiten de promotie was erg waardevol. Mijn moeder wil ik in het bijzonder bedanken voor zoveel praktische en mentale steun bij de afronding van het proefschrift. Het is bijzonder hoe precies je telkens op de hoogte bleef. En Remko, lieve broer en paranimf, wat fijn dat je erbij zal zijn in de uurtjes van spanning en ontspanning rondom de verdediging.

En tot slot mijn geweldige mannen, lieve William, Merlijn en Camiel, zonder jullie was dit proefschrift natuurlijk allang af geweest… Maar wat hebben we er samen veel voor teruggekregen!

Curriculum Vitae

Maaike (Heleen) Nauta werd op 14 juli 1971 geboren in Delft, als dochter van Carla Dijkstra en Hans Nauta, en zus van oudere broer Remko. In 1989 rondde zij het Stedelijk Gymnasium in Leeuwarden af. Daarna werkte ze een jaar als au pair in Parijs. In 1990 ging zij studeren aan de Rijksuniversiteit Groningen. Ze haalde in 1991 de propedeuse Pedagogiek, in 1992 de propedeuse van Psychologie, en in 1996 studeerde ze cum laude af in de Klinische Psychologie. Bij de afdeling Klinische Psychologie van de RuG begon zij in 1996 aan een promotietraject rond de diagnostiek en behandeling van angstige kinderen, in samenwerking met Accare (polikliniek van het Academisch Centrum voor Kinder- en Jeugdpsychiatrie) en de jeugd-afdeling van GGZ-Groningen-Zuid. Naast haar aanstelling als promovendus volgde ze cursussen en supervisies over diagnostiek en behandeling, wat leidde tot een registratie als GZ-psycholoog. Ze hoopt binnenkort ook haar registratie bij de Vereniging voor Gedragstherapie en Cognitieve Therapie (VGCt) te behalen.
Momenteel werkt ze bij Accare, deels als behandelaar (sinds 2001) en deels als onderzoeker (sinds 2003). Daarnaast is ze docent bij Klinische Psychologie van de RuG, waar ze vooral vaardighedenonderwijs verzorgt.

Maaike woont samen met William Ermens en samen hebben ze twee zoontjes, Merlijn van 4 jaar en Camiel van 1 jaar.